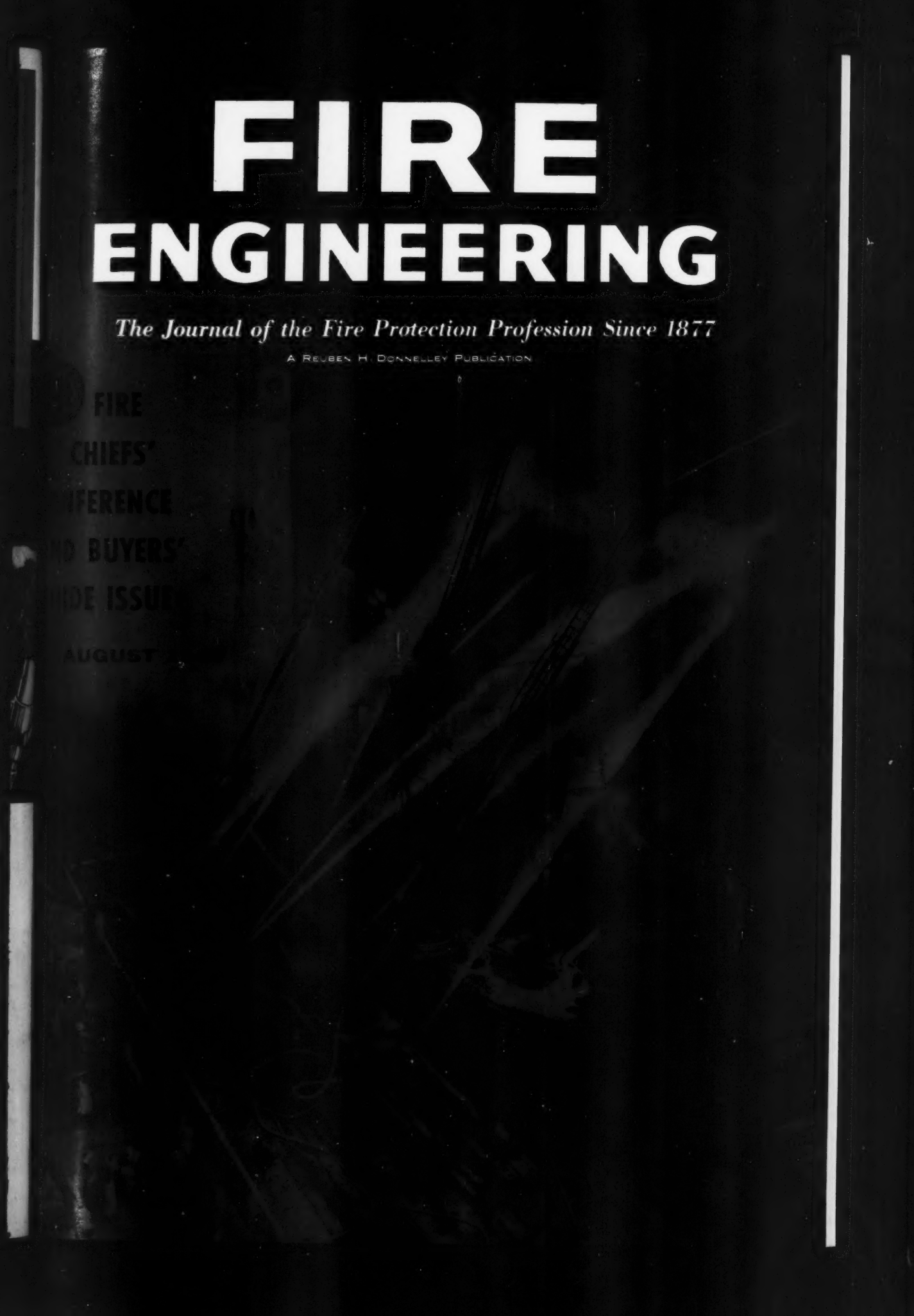
FIRE ENGINEERING

The Journal of the Fire Protection Profession Since 1877

A Reuben H. Donnelley Publication



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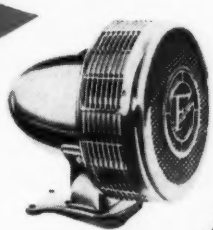

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FIRE ENGINEERING

VOL. 112 AUGUST, 1959 NO. 8

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I. HERBERT CASE, *Publisher* — DONALD M. O'BRIEN, *Editor* — FRED SHEPPERD, *Advisory Editor* — ALFRED J. HOUGHTON, *Advertising Director*

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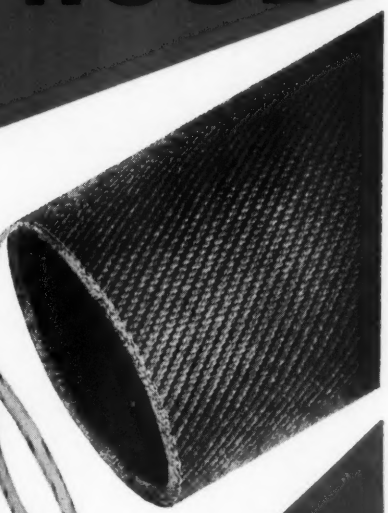
Fabric FIRE HOSE

PRESENTS



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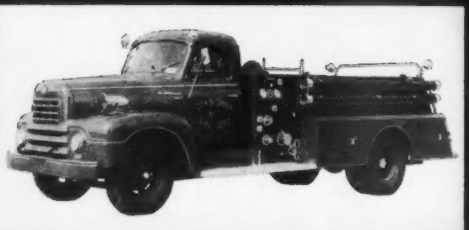
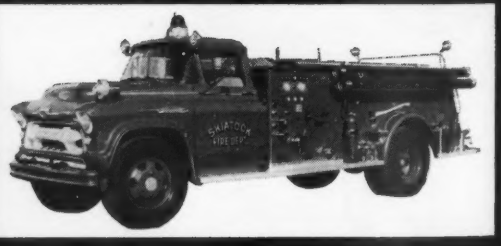
IN CANADA *Pierre Thibault* CANADA, LTD., LTEE., PIERREVILLE, QUEBEC

BOARDMAN BUILDS BETTER PUMPERS for Less!





THE BEST PUMPER your community can possibly have is the pumper that fits its needs *exactly*. And Boardman pumpers are built to do just that, with the features and equipment you need. They are mounted on the standard chassis of your choice, for quick and inexpensive local service and maintenance! Boardman pumpers are built to your specifications — but for less than a "custom-built" price. WRITE AT ONCE for your copy of the new brochure, "BOARDMAN FIRE FIGHTERS."

BOARDMAN

THE BOARDMAN CO.

OKLAHOMA CITY

B.F.Goodrich

This light hose makes buying by the bulk old-fashioned

B.F.Goodrich hose is easier handling, saves time at fires

It used to be that a bulky hose was stronger than a light one. But with this B.F.Goodrich hose, "lightweight" no longer means a hose that can't take pressure or abuse. And what a difference it makes to the men handling hose. Here are some of the comments on this hose made by captains of the Cleveland (Ohio) Fire Department:

"It's easy handling—the same whether it's wet or dry. And it takes less space. We could get only 300 feet of the old 2½" hose in the same space that now takes 500 feet of the B.F.Goodrich hose," says Captain Leo Pavlick.

Captain Beaumont J. Fletterick reports, "We were especially glad to have it last winter. It didn't absorb moisture from the snow or water, stayed flexible."

This B.F.Goodrich hose is actually 22% lighter, much more flexible and stronger than ordinary hose. That's because the "filler" cords which go around the hose and carry the load under pressure are made of Dacron fiber. These cords are thinner, yet stronger than cords used in reinforcement on heavier, bulkier hose. The hose coils tighter than ordinary hose, so that hundreds of extra feet can be racked on a truck—up to a third more on a standard truck.

When you want a hose that's light, flexible, and will last longer than any other hose sold, get B.F.Goodrich hose. Your B.F.Goodrich distributor can tell you more about it. *B.F.Goodrich Industrial Products Co., Dept.* AI-678, *Akron 18, Ohio.*

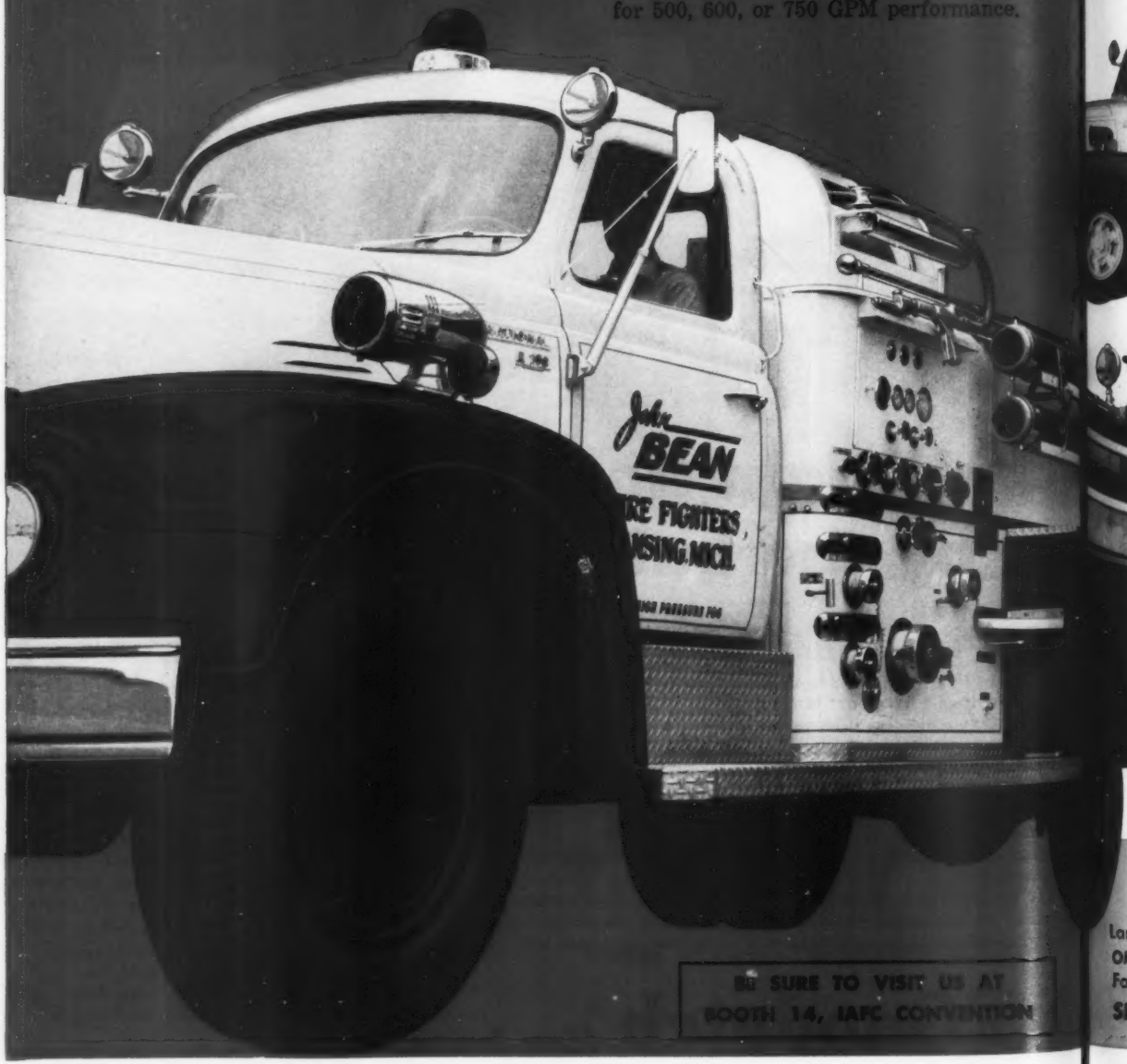
B.F.Goodrich *fire hose*

The Scientific Approach fo

. . . choose from the complete line of Joh

HPV...high pressure fog and volume
with the double power of 2 great pumps

Two proven methods — high pressure fog th
cools, smothers and isolates flames, plus Unde
writers' approved volume streams — give yo
an unbeatable combination. The John Bea
High-Pressure Fog pump delivers 60 GPM
850 PSI pump pressure — and the John Bea
Class A centrifugal volume pump is availab
for 500, 600, or 750 GPM performance.



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BOOTH 14, IAFC CONVENTION

ch for that INSTANT PUNCH

John BEAN high-pressure fog apparatus

The instant punch of John Bean high pressure fog stops fires **before** they grow. Microscopic size fog particles provide maximum heat absorbing effect with **any** type fire. This scientific approach, with the original John Bean high pressure fog, extinguishes 95% of your fires faster — with little or no water damage. That's why so many fire departments select John Bean fire apparatus.

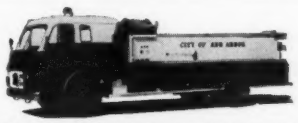
HPF . . . high pressure fog equipment that makes water go 10 times as far. Fighting fires on the run or stationary, there's no problem of water source. One gallon of water as high pressure fog has the fire killing capacity of ten or more gallons discharged in a conventional stream.

LITTLE BEAN . . . high pressure fog plus extra mobility for instant action

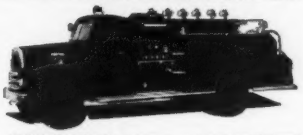
Built for speed, compactness and easy handling, the "Little Bean" high-pressure fog fire fighter is ideal for your "first out" unit — and as an all-around fire fighter for smaller and rural departments — for the fast knockout of forest, grass and brush fires — for airport and industrial plant protection.

MULTI-PURPOSE high pressure fog equipment

Apparatus shown at right is typical of special purpose units engineered by John Bean. These fire fighters are designed to accommodate all types of accessory tools and emergency equipment such as salvage and rescue equipment, forceable entry tools, ladders, light generators, flood lights, two-way radio, walkie-talkie, acetylene cutting torches, portable power saws and drills, first aid equipment, and regular fire department tools and appliances.



COMBINATION LADDER and RESCUE UNIT



COMBINATION SQUAD and RESCUE UNIT

John fmc **BEAN**

Lansing 4, Michigan San Jose 1, Calif.

ORIGINAL HIGH-PRESSURE FOG FIRE-FIGHTERS

Food Machinery and Chemical Corporation

SEND COUPON for details TODAY

John BEAN Division of Food Machinery and Chemical Corp.
Lansing 4, Michigan San Jose 1, California

Please send me literature on the following fire fighters:

☐ HPV — high pressure fog and volume ☐ HPF — high pressure fog
☐ Little Bean high pressure fog ☐ Multi-Purpose high pressure fog equipment

Name_____

Address_____

City_____ State_____

Just one of the rooms in Christopher's new gallery

FIRE TRUCKS ? AMBULANCES ?

YES! Here at Christopher's you will find Modern American Engineering combined with Old World Craftsmanship to give you the ultimate in protection and elegance.

When you buy "Christopher" you buy custom engineering and designing not just "custom building". Each unit is tailored to your particular needs *only*—there is no such thing as a standard piece of equipment with us.

We invite your inquiries on the following: ▶

Unit now in operation with Landsdowne Fire Company, Landsdowne, Pa.

* **F.A.P.A.** Combination fire truck-ambulance-squad and rescue car all in one! A maneuverable compact unit carrying water, pump, hose, foam, four stretchers, all necessary first aid and emergency equipment and seats twelve men.

* **RES-Q** Same as above without fire equipment.

Five to Ten-Man Squad Car (or Squad Pumper)

. . . Sedan type enclosed cab with open rear.

* **Cruiser Ambulance**

. . . . With Christopher's patented roof design for increased headroom (both on GMC and Chevrolet!)

Rescue Cars —from one ton to any size and tonnage desired.

Pumpers—from one ton to any size and tonnage desired.

*Patented — Exclusively with Christopher.

The CHRISTOPHER

DIVISION OF INTERNATIONAL AUTO-

Emergency unit for Ossining, New York

RESCUE CARS ?

Each bonafide inquiry will receive our immediate attention. Blueprints, specifications and personal service will be available to you through our own engineering staff and by the men who actually will work on your job.

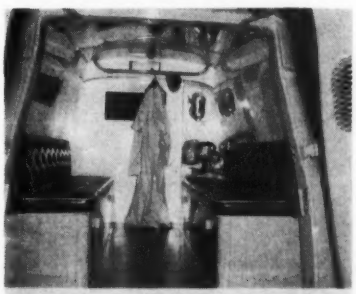
We at Christopher are artists as well as engineers—when in New York stop in to visit our offices and enjoy an art show at the same time . . . We shall be delighted to talk to you about trucks and paintings, too.

Christopher Galleries will be glad to cooperate with fire companies in fund raising campaigns—Write for details.

DEALERS

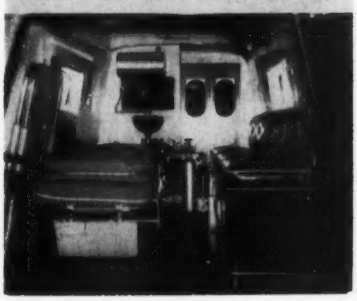
A few choice territories are available. Write for our proposition.

RECENT DELIVERIES



SUNBURY, PENNSYLVANIA
RESCUE UNIT

HUDSON COUNTY
BOULEVARD COMMISSION
JERSEY CITY, N. J.



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ETHIOPIA IMPERIAL
HIGHWAY COMMAND
ADDIS ABABA
Complete with water tank, sterilizer, air conditioning, etc.

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INDUSTRIES CORP.

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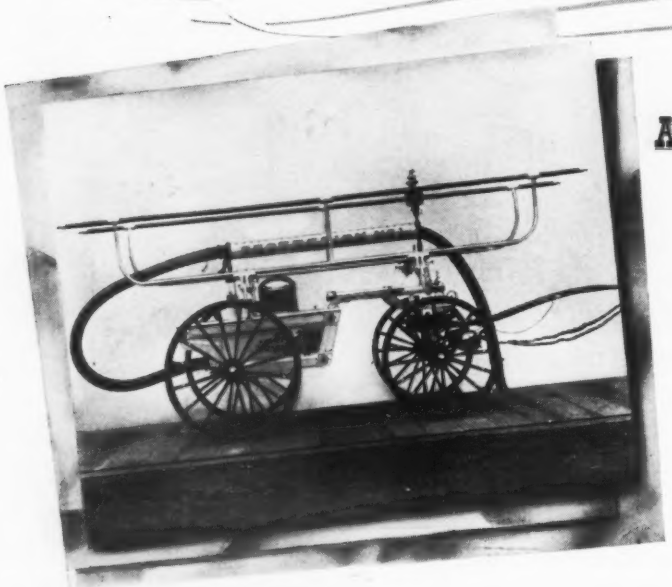
The 125th Anniversary

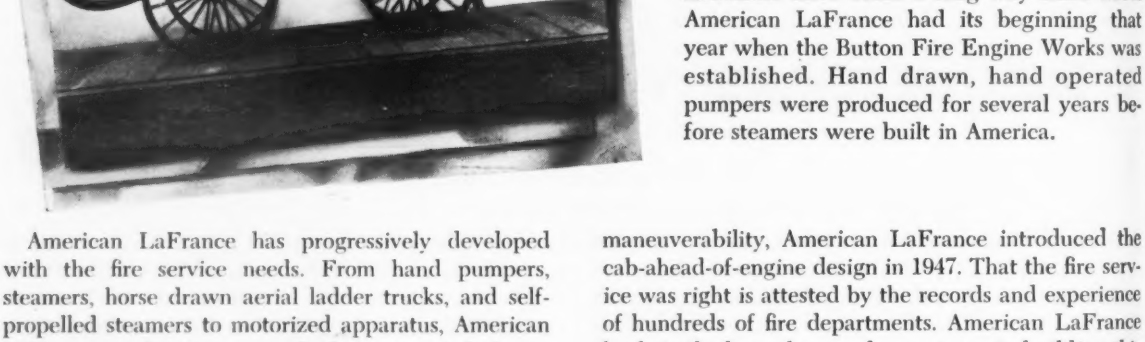


American LaFrance "Hand Tub" of type built 1834-1905

We are celebrating our 125th Anniversary this year. Both the fire service and American LaFrance have come a long way since 1834. American LaFrance had its beginning that year when the Button Fire Engine Works was established. Hand drawn, hand operated pumpers were produced for several years before steamers were built in America.

American LaFrance has progressively developed with the fire service needs. From hand pumpers, steamers, horse drawn aerial ladder trucks, and self-propelled steamers to motorized apparatus, American LaFrance production covers the longest period of continuous manufacture of fire engines in the world.

To meet the expressed need of the fire service for better visibility and safety for the driver, with greater maneuverability, American LaFrance introduced the cab-ahead-of-engine design in 1947. That the fire service was right is attested by the records and experience of hundreds of fire departments. American LaFrance leads in the know-how and experience in building this type of apparatus. *And now – the new 900 Series shown on these pages – the finest fire engines we ever produced.*



Model INVADER, 750 g.p.m. Class A, semi-cab.

# of AMERICAN LAFRANCE

Model INVADER, 750 g.p.m. Class A, canopy cab.

900 Series Custom Pumpers set new standards of excellence

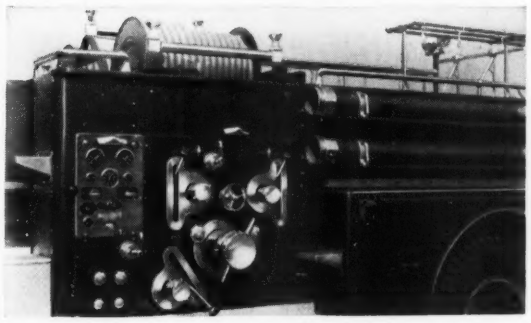
American LaFrance leadership is outstanding in the new 900 Series custom built fire engines. The same basic features of construction are incorporated in all custom built pumpers. The exterior appearance varies only with trim and specified equipment to meet your operating needs.

There are over 15 Extra Value features provided standard only by American LaFrance. These Extra Values provide longer service life with less maintenance, better operation and greater dependability.

These Extra Value features are:

- Wider cab
- Heavier frame
- Shock absorbers, front, rear
- Dual fuel system
- Rubber suspension of cab
- Wrap-around spring eyes
- Twinflow pump
- Hardened stainless impeller shaft
- Single pump packing
- Pump transmission cooling
- Static and dynamic balanced impellers
- Full 2½" water flow gates
- Chrome plated gate ball
- Ventilated disc wheels
- Booster by-pass cooling
- Lacquer finish

For the best value in fire engines, specify American LaFrance. More and more fire departments are doing it! Write for complete brochure of detail construction.



Pump controls grouped for accessibility. All pump operating gages, engine throttle, pump primer control, and pump pressure governor control are mounted on a removable panel, indirectly lighted for night operation. All discharge gate controls, transfer valve, water tank valve, bleeder valves, auxiliary cooler, radiator fill and booster cooling line valve are located for operator's convenience.

AMERICAN LAFRANCE

A DIVISION OF STERLING PRECISION CORPORATION
ELMIRA, N.Y., U.S.A.

LaFrance Export Corporation
Elmira, N. Y.

LaFrance Fire Engine and Foamite Limited
Toronto 9, Ontario, Canada

Now...no need t

Shown here is a fire company washing down hose of "Dacron" after a fire and loading it on the truck wet—ready for the next action.

FIRE HOSE MADE WITH "DACRON" IS EASIER TO HANDLE...

to dry your hose!

New municipal fire hose with jacket made entirely of DACRON® POLYESTER FIBER is not damaged by mildew

It's the greatest labor saver since firemen stopped pumping by hand — fire hose that can be packed wet without danger of rot or mildew! The reason—new jackets made *entirely* of Du Pont "Dacron"* polyester fiber.

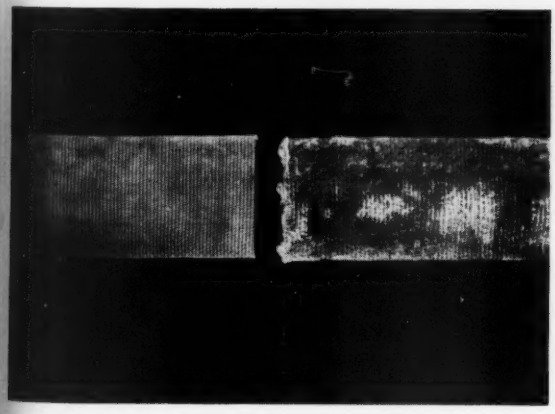
Tests show new hose of "Dacron" is not weakened or damaged by mildew . . . eliminates the need to dry or change hose after each run . . . lets you stand ready to answer calls without delay.

At the scene of a fire, where every second counts, rugged hose of "Dacron" saves you precious time. It absorbs little water . . . remains easy to handle . . . gets into action fast. And hose of "Dacron" stubbornly resists damage from abrasion or chemicals to give years of dependable service.

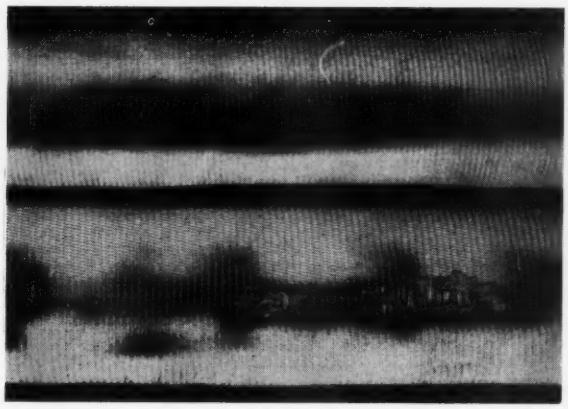
Next time you buy hose, be sure you buy the best—hose with jackets of all "Dacron". It's produced by leading hose manufacturers. For their names, write: E. I. du Pont de Nemours & Co. (Inc.), Textile Fibers Department, Wilmington 98, Delaware.

**"Dacron" is Du Pont's registered trademark for its polyester fiber.*

SEE FOR YOURSELF HOW "DACRON" RESISTS DEGRADATION



BURIED 27 DAYS in moist, warm soil, hose with a jacket made of "Dacron" (left) was unaffected. In hose jacketed with "Dacron"/cotton (right), the "Dacron" filler cords remained intact and unaffected by mold or bacteria, while the cotton was severely damaged.



DRAGGED 2.5 MILES over asphalt road, hose with jacket made entirely of "Dacron" (top) stubbornly resisted damage from wear and abrasion. Hose with jacket made of cotton (bottom) was severely worn and abraded and was rendered unserviceable.

DU PONT
REG. U. S. PAT. OFF.

Be sure to visit the Du Pont exhibit:
Booths 17 and 18 at the I.A.F.C. Show,
Grand Rapids, Mich., August 31-September 3.

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

GIVES IMPROVED PERFORMANCE...PACKS MORE COMPACTLY

The NEW
NIELSEN FIRE NOZZLE

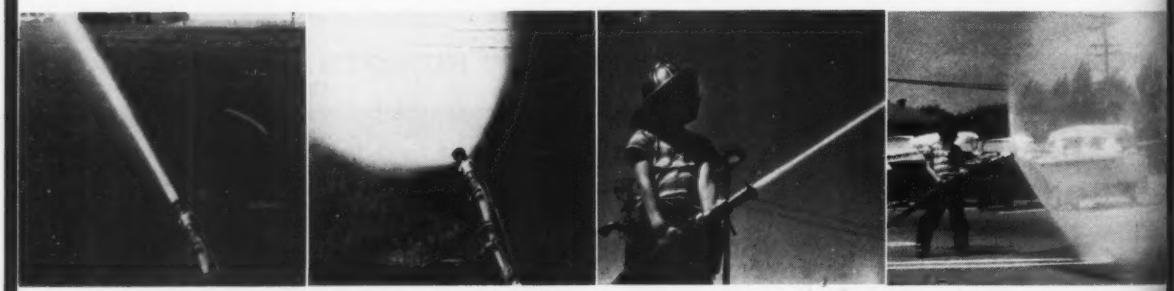
This amazing new design fire nozzle has exclusive features found in no other type equipment. Its ease of control and handling will sell you on first demonstration. In a recent test by the San Lorenzo Village Fire Department headed by Chief Tom Ducey, a 1″ nozzle was actually handled by a five year old boy with 180 lbs. nozzle pressure. Some of the outstanding features are as follows:

The valve seat at discharge of nozzle is controlled by use of eccentric shaft and linkage. Shaft adjustment for various volumes is controlled by a hand lever.

The neoprene valve seat is permanently vulcanized to the valve disc. This eliminates possibility of leakage as well as continuous regrinding of metal surfaces.

Valve disc is mounted on rubber "O" ring which allows valve seat to centralize itself with flow of water.

Retaining nut is ball shaped with small "O" ring inserted to prevent leakage between nut and threaded shaft.



The adjustment of various patterns of water from a flat projecting current to a solid stream is made easily and with practically no effort as the adjustment ring rides on ball bearings. The amount of water discharged at each phase of adjustment is the same.

Pattern of water is controlled by a separate deflector cup (protected by heavy duty neoprene collar) which is independent of the water control valve.

Travel of deflector cup is controlled by a series of ball bearings in two grooves (one in cup and one in nozzle body). These bearings add to ease of operation and give extra protection to prevent cup from detaching itself from nozzle body.

All parts of this nozzle are made of non-corrosive material. These nozzles can be furnished with any type of thread.

Size	Gal. per Min.	P.S.I.
1″ C.H. Thread	25	125
1½″	110	125
2½″	350	125

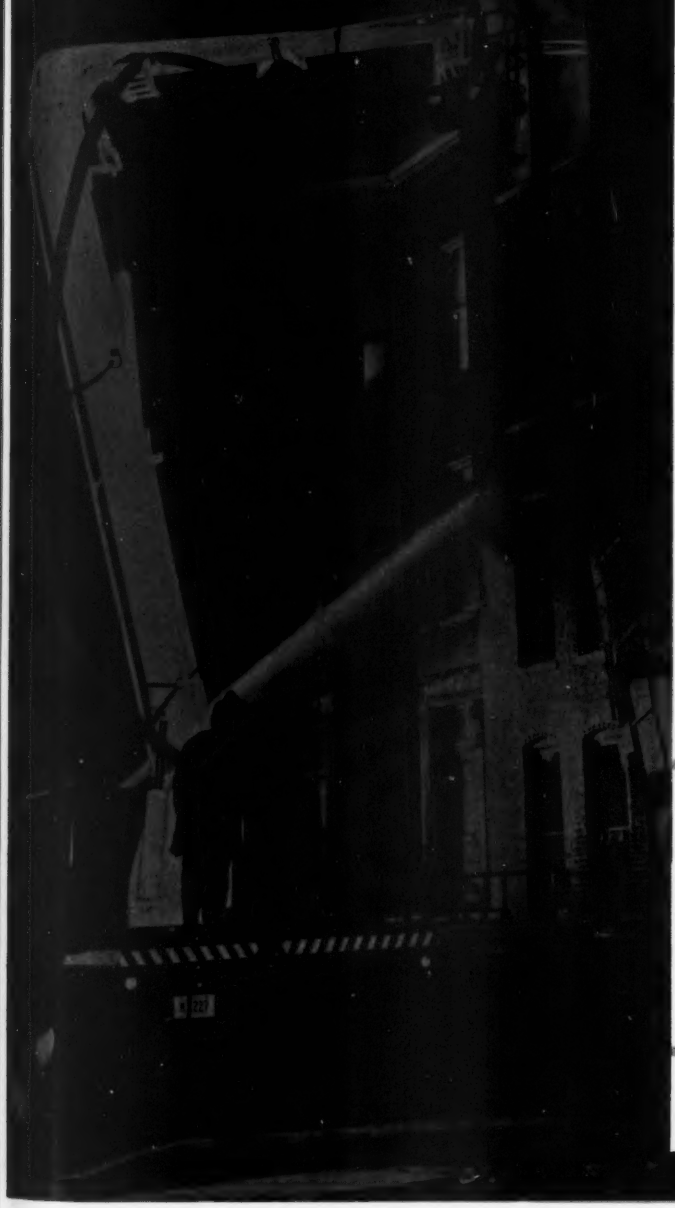
We also manufacture Remote Control Operated Nozzles and Ladder Pipes.

For complete information write:

NIELSEN NOZZLE CO.

8006 IRIS STREET • OAKLAND 5, CALIFORNIA

IT'S HISTORY-MAKING



the sensational new Pitman Snorkel

Here is the first really new concept in fire apparatus in more than 20 years . . . an entirely new weapon for the fire-fighter. Now, in far greater safety than ever before, a fireman can put himself exactly where he needs to be, and wants to be, to do the most effective job of fighting a fire. Up or down, right or left, in or out . . . the Pitman Snorkel's versatility of movement is virtually unlimited. Hailed in the nation's press as "amazing" and "revolutionary", the Pitman Snorkel is now available for demonstration. Why not see for yourself just how revolutionary it actually is! All you have to do is fill out and mail the coupon below.

NOTE: The unit pictured here is a standard, commercial model of the Pitman Aerial Platform as adapted by the Chicago Fire Department for fire fighting. This unit was used in fighting more than 250 fires during a 6-month period beginning in October, 1958. The many improved features found in the Pitman Snorkel were incorporated as a result of experience gained by the Chicago Fire Department in its use of this unit.

I am interested in seeing a demonstration of the Pitman Snorkel ☐. Please send literature only at this time ☐. I am interested in the 50′ model ☐. 65′ model ☐.

Name_____ Title_____

Dept.
(or company)_____

Street_____ Phone No._____

City_____ State_____

PITMAN MANUFACTURING CO.
Grandview, Missouri

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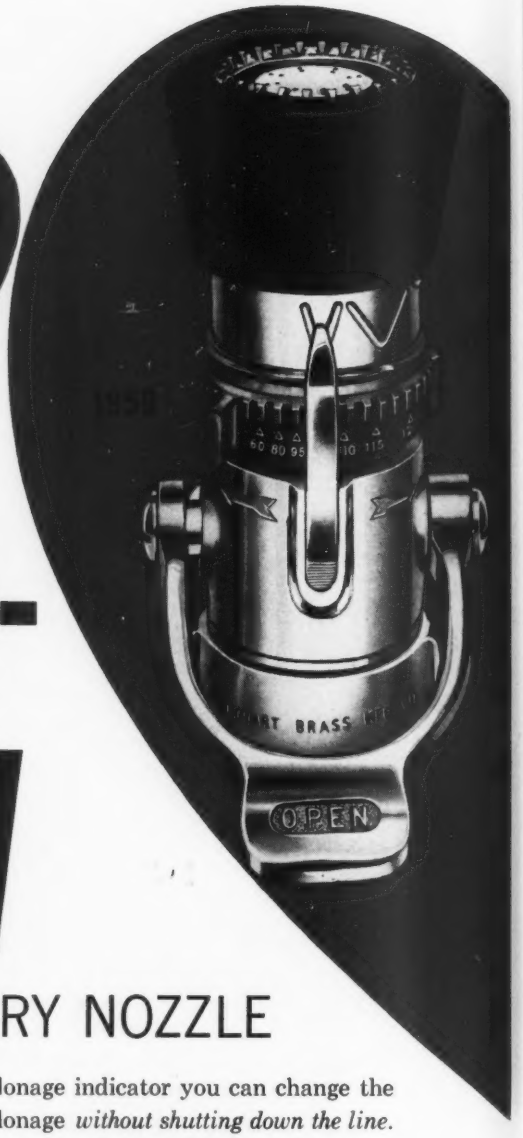
announces

Select-O-FLOW

Constant Flow MYSTERY NOZZLE



Elkhart's latest nozzle success. A new constant flow Mystery Nozzle—Select-O-FLOW, that is sure to stand King high in the long list of world famous Elkhart Mystery Nozzles. Underwriters' approved, the new Select-O-FLOW nozzle will handle variable gallonage from 60 to 125 G.P.M. at 100 p.s.i. nozzle pressure. By merely turning the gallonage indicator you can change the gallonage *without shutting down the line.* Has stream indicators for selecting narrow to wide fog patterns and straight stream too. *Be sure*—check all of the outstanding features of Select-O-Flow, a nozzle that Elkhart is proud to feature in its proven line. These features are listed on the opposite page.

Pioneer of the Famous Mystery Nozzle

- Variable gallonage from 60 to 125 G.P.M. at 100 p.s.i. nozzle pressure.
- Underwriters' approved.
- Change the gallonage without shutting down the line. (Merely turn dial indicator.)
- Maintain accurate stream characteristics at all gallonage positions.
- Metal waterway insures perfect stream even when subject to heat and abrasive material.
- Stainless steel stem eliminates possibility of corrosion and abrasion.
- New synthetic bumper and hand grip resistant to oil, heat and sunlight.
- Improved handle for easier operation. (Horseshoe type handle optional).
- Optional base swivel or solid.
- Patented stem construction. (See illustration) Increases fog distribution and produces excellent foam in any nozzle setting.
- Shut-off features new bonded seat, makes it possible to adjust for wear without disassembling nozzle.
- Non-clogging—no screen required.

First Showing
at I.A.F.C.
Booths 78 and 78A
Be Sure to See It!

ELKHART BRASS MFG. CO., INC., Elkhart, Indiana

More than half a century of fire fighting progress

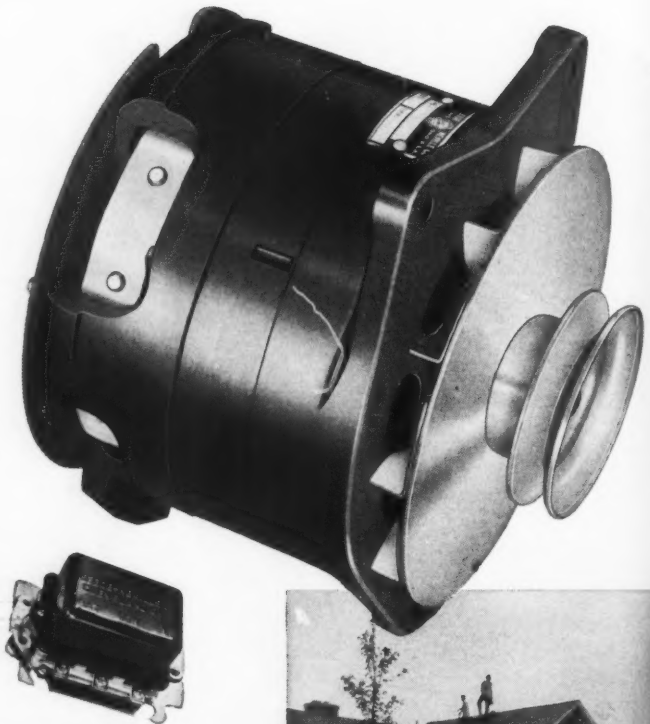
LEECE-NEVILLE ANNOUNCES AL

Advanced Leece-Neville engineering has made possible the elimination of separately-mounted Selenium rectifiers in L-N Alternator-Generator Systems! New improved Silicon Cell rectifiers are *built-in* as an integral part of the alternator itself.

First introduced in 1957, several hundred two-piece systems were installed for actual in-service tests. Hundreds of thousands of miles of testing produced extraordinary results. Now these two-piece systems with built-in Silicon rectifiers are available to you!

The new systems offer you *greatly improved performance* . . . plus all of these cost-cutting advantages: (1) reduced installation costs, (2) lower maintenance expense, (3) comparable original cost to previous 3-piece systems, (4) savings in space, (5) greater heat resistance, and (6) longer life.

Also Available: Low-cost conversion kits for converting previous 3-piece systems to new 2-piece systems with built-in Silicon rectifiers.



New Standard Type
No. A001-2002AA with built-in Silicon rectifier—60 Amp rating, 19 lbs.

OUTSTANDING IMPROVEMENTS IN PERFORMANCE!

Idle current increased 42% to 27 Amps— *(increase over previous standard system).*

60-Amp current at city speeds—*an increase of 20%.*

60-Amp current at high speeds—*again, an increase of 20%.*

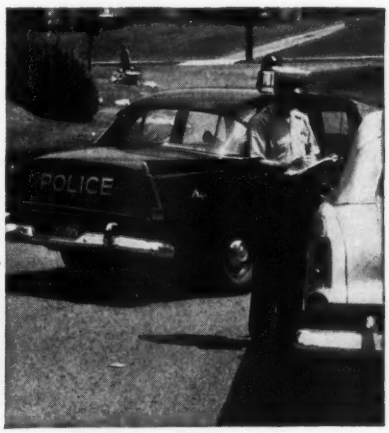
ALTERNATOR-GENERATOR
with built-in silicon rectifier

Should your vehicles have L-N Alternator-Generators?

ANY vehicle with accessories that require heavy electrical output, such as two-way radios, sirens, warning lights . . . any vehicle that performs a heavy task at speeds too slow to permit a "heavy-duty" generator to keep the battery charged . . . or any vehicle making frequent stops with motor idling . . . *definitely needs* a Leece-Neville alternator-generator system! Here's why!

Heavy electrical loads, frequent stops or prolonged idling of vehicles equipped with "heavy-duty" DC generators pull batteries down and wear out other electrical components fast. The result is unnecessary down-time, disrupted schedules, high maintenance expense.

Leece-Neville alternators keep batteries charged at all times, provide adequate output with engine idling, and are unaffected by high-speed operations. Constant voltage level control improves the performance and life of all electrical units on the vehicle. And, best of all, L-N alternators actually cost no more than most "heavy-duty" generators!



For more information, *contact your local L-N Distributor or mail the coupon below:*

QUALITY AUTOMOTIVE ELECTRICAL EQUIPMENT
Leece-Neville
*** SINCE 1909 ***

L-N ALTERNATOR SYSTEMS ARE AVAILABLE AS FACTORY-INSTALLED ORIGINAL EQUIPMENT ON ALMOST ALL NEW VEHICLES.

TO: THE LEECE-NEVILLE COMPANY
DEPT. MF-3 — CLEVELAND 3, OHIO

☐ *Send literature on L-N Alternators*
☐ *Have your salesman call on me*

Type of Service _____

NAME _____ **TITLE** _____

ADDRESS _____

CITY _____ **STATE** _____

a new, safe way to come to the rescue

Mobile Holan Elbow reaches up, out and down

Safety comes first—for firemen and trapped occupants. That's why fire departments are looking to this spectacular twin-bucket Holan Elbow—already performing gymnastics in the utility field.

Firemen ride to the rescue in enclosed buckets—spotting the buckets exactly where needed for rescue work or water spraying.

Lightweight by fire equipment standards, the truck and Elbow can go over curbs and across fields to get to fires fast.

Bucket-controls are precise—arm movement is instantaneous with lever movement. Upper arm moves 270°. . . lower arm 120°. Elbow rotates 360° continuously.

There are all kinds of safety features to talk about. May we talk to *you* about them? Write us or get in touch with a Holan Field Representative.

OTHER HOLAN EQUIPMENT includes all-hydraulic power ladders. Three levers control rotation, elevation and fly ladder. Heights to 40'.

Holan mobile aerial equipment

Holan Corporation • 4100 West 150th St. • Cleveland 35, O. • A Subsidiary of The Ohio Brass Company • Plants in Cleveland, O. • Griffin, Ga. • Phoenix, Ariz.

MIDWESTERN

Safety Clothing for Firemen

The Original STRIPED SAFETY COAT

. . . was introduced 17 years ago and has been a leader ever since its introduction. There have been many imitations and substitutes offered but the ORIGINAL with the YELLOW stripes rubberized into the black rubber has stood the test against the makeshift models where the stripes are glued, sewed or painted on the material.

Protection, Comfort and Service are built into every detail of this coat. Many lives have been saved and accidents avoided in departments where the ORIGINAL MIDWESTERN SAFETY COAT is specified as standard equipment.

COLLAR — Close fitting around neck, up or down. Keeps out water and sparks. Rubberized outside, corduroy inside, cemented firmly so water can't lodge between. Adjustable strap fastener.

BODY — Only 2 pieces — one middle back seam.

SLEEVES — New style with vertical seams. Originated and designed by Midwestern for use in fire garments. Easy to get into fast. Won't tear out when carrying hose or other equipment on shoulder. Flexible, elastic inner sleeve for wrist.

STORM FLAP — 6-inch flap on front of coat keeps out cold and water.

SNAPS — 5 new Midwestern safety snaps.

SEAMS — All double stitched and cemented with layer of rubber cement. No water can penetrate through needle holes. Reinforced with rivets in all places subject to extra strain.

POCKETS — One extra large inside pocket, regular.

COMBINATION SAFETY SUIT

The Midwestern Rubberized Coat and Bunker Pants make it easy for firemen to keep both warm and dry even in the most severe weather. Close fitting collar and elastic inner sleeve keep out sparks and water. Detachable wool lining. Pants have double-stitched seams, reinforcing rivets at points of strain, large roomy pocket space.

See your MIDWESTERN dealer or WRITE for Free Catalog and fabric samples

NONE GENUINE WITHOUT THIS TRADE

MIDWESTERN SAFETY MFG. CO., Mackinaw, Ill.
Located in the heart of the Greater Peoria Manufacturing Area
Manufacturers of the Famous MACKINAW Safety Coat

Conventional or cab-forward..

Mack B-model, 1250-gpm semi-cab, triple-combination pumper

Mack B-model, 4-wheel, 100' Mack-Maginus aerial

Mack C-model, 1250-gpm semi-cab pumper

Mack C-model, 1000-gpm canopy-cab, triple-combination pumper

..they're all

"Built Like a Mack"

When you select Mack fire apparatus you know you will get the characteristics and performance you want and have a right to expect. Mack will deliver the unit that exactly meets YOUR needs: cab-forward or conventional models . . . brakes, rear axle ratios, transmissions—standard or automatic—and chassis design for your own particular needs . . . built with famous Mack components to meet your most exacting requirements.

Mack fire apparatus is built to the highest standards in the industry. For sheer dependability, nothing can touch it. For sustained performance with only routine attention, nothing can match it. You can always depend on a Mack. Mack Fire Apparatus, Allentown, Pennsylvania. In Canada: Mack Trucks of Canada, Ltd., Toronto, Ontario.

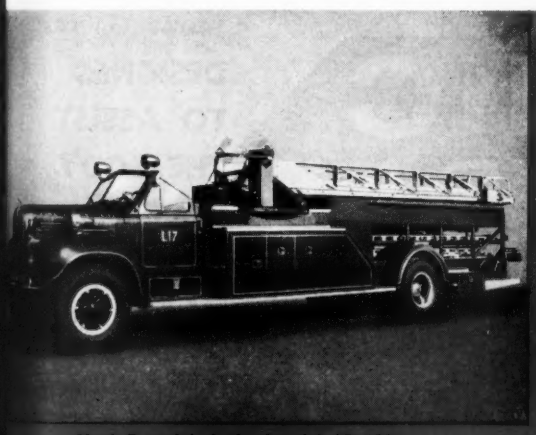
7141

MACK

FIRST NAME FOR

FIRE APPARATUS

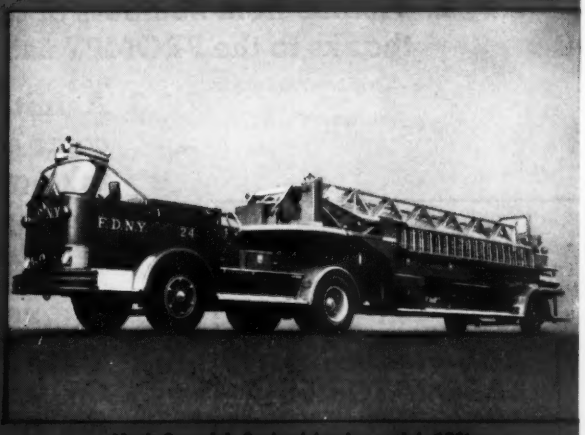
COMPLETE LINE OF PUMPERS—500 to 1250 GPM • SQUAD AND HOSE WAGONS • AERIALS 65′ to 144′ • COMBINATION LADDER TRUCKS



Mack B-model, 4-wheel aerial, 65′-100′

Mack B-model, 800-gpm coupe cab pumper

Mack C-model, 750-gpm canopy-cab pumper



Mack C-model, 6-wheel tractor aerial, 100′

BATRONIC VENTILAIDE

DESIGNED TO ASSIST THE BODY TO BREATHE

1. **NOW—FOR THE FIRST TIME! A device to convert weak, difficult breathing into good strong inspirations; thus assuring an adequate supply of oxygen to the lungs!**

2. **Victims from 20 hours of age to 79 years, have recovered, thanks to the PROMPT use of the Ventilaide!**

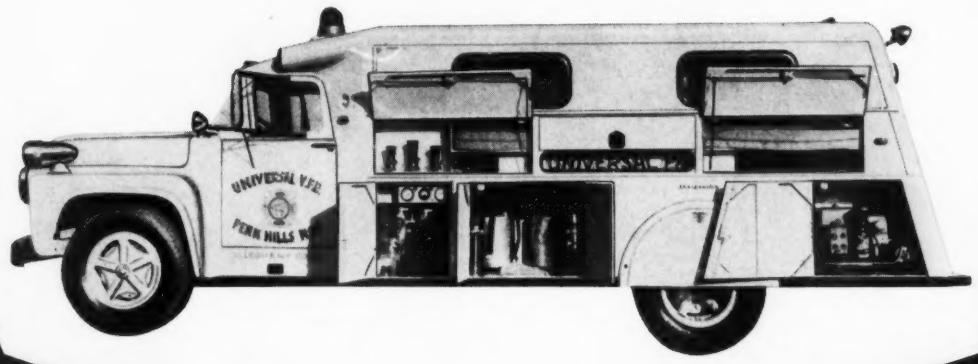
3. **A unit, that in a short period of time, has become a MUST for all fire, rescue groups who take great pride in their effective, modern, life-saving equipment!**

4. **NOTE: If the HELP you can offer a victim, who is having great difficulty in breathing, is LIMITED; you may be faced with a far more serious problem: NO BREATHING AT ALL!!**

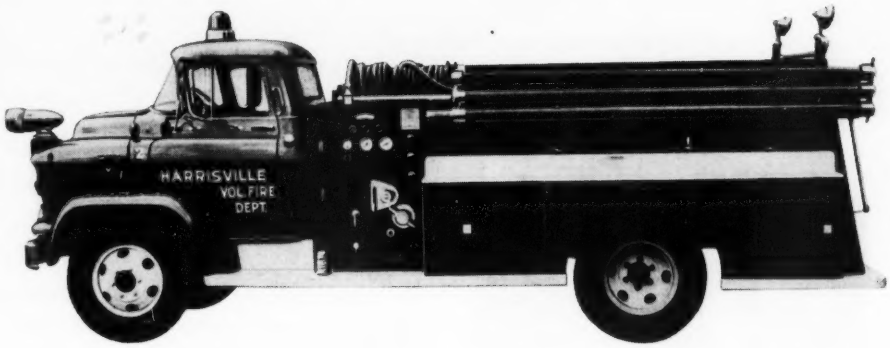
Write for folder and bulletin "BREATHING FACTS"

BATROW LABORATORIES
Branford, Conn.

RESCUE TRUCKS



. . . OR PUMPERS



We design and build equipment to your specifications and budget! Many hundreds of smaller community departments have one or more pieces of Sharpsville-built apparatus. Our representative will gladly show you proof of superiority and economy!

Sharpsville

STEEL FABRICATORS, Inc.
SHARPSVILLE, PA.

BUILDERS OF SERVICE, CRASH AND LADDER TRUCKS • VOLUME AND HIGH-PRESSURE PUMPERS • SQUAD AND EMERGENCY CARS • STORAGE TANKS

FIRST
in fire fighting

Fire Master Corp.

UNIVERSAL

CENTRAL

FWD

WARD LA FRANCE

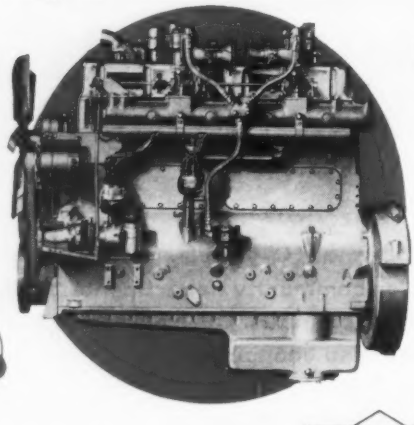
PIRSCH

MAXIM

HOWE

OREN

Thibault



Model 145-GZB—300 hp range
High-Output Fire Fighter—

Six cylinders, 5⅜-in. bore x 6-in. stroke; 817 cu. in. displ., with counterbalanced and vibration dampened 3½-in. 7-bearing crankshaft; dual downdraft carburetion; dual ignition; precision extra high capacity bearings; removable wet type cylinder sleeves, aluminum pistons, overhead valves with Stellite-faced exhaust valves and seats. Arranged for full electrical equipment and all modern accessories. Get Bulletin 1662.

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN
New York • Tulsa • Los Angeles
Factories at Waukesha, Wis., and Clinton, Iowa

439

WAUKESHA fire fighter ENGINES

CHIEFS—

Have you been eager to test the effectiveness of WET WATER under both laboratory and actual fire fighting conditions . . . without a large investment in materials?

NOW YOU CAN!

For the first time we are offering this complete LST Combination TEST KIT & WET WATER to help you prove to yourself the high efficiency of

LOW SURFACE TENSION

LST *

LESS SOAKING TIME

DUAL PURPOSE WET WATER
NEW—ECONOMICAL—EFFECTIVE

LST One-Shot individually packaged Wet Water. Measured amount in 6 oz. unbreakable Poly bottle. Simply fill 5 gal. pump or tank extinguisher with plain water, (SOFT—HARD—SALT) and then add entire contents of LST One-Shot into top opening of extinguisher. Shake and you are ready to operate. Check these reasons for using LST One-Shot.

- ✔ *No measuring. Exact amount for maximum penetration and absorption.*
- ✔ *Economical. Mix amount needed. No waste. Economy priced.*
- ✔ *Effectiveness. Penetrates dense brush and deep seated fires. Exceeds the NFPA Canvas Wetting & Wick Absorption tests.*

Give your Department the most advanced fire fighting technique, by using LST One-Shot, the individually packed Wet Water.

LST WET WATER is available both in standard 5 gallon, I.C.C. steel cans (to treat 500 gallons of water) as well as in LST ONE-SHOT, 6-oz. Poly bottles for use in standard 5 gallon tank or pump extinguishers.

*Trade-Mark

One 6 oz. LST One-Shot packed with $1.00 Test Kit Offer.

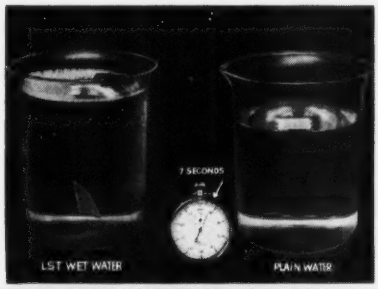
FIRE CONTROL THROUGH CHEMISTRY

Professional

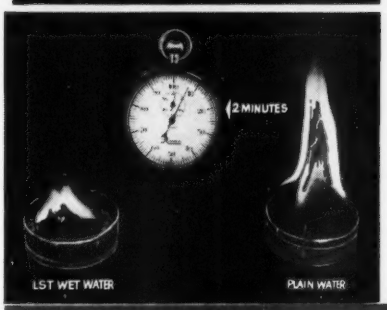
FIRE CHEMICAL CO.

17 West 60 Street, New York 23, N. Y.

ATTENTION DRILL OFFICERS: Demonstrate the efficiency of LST WET WATER under actual fire conditions at outdoor drill. LST One-Shot sufficient for 5 gallon tank or pump extinguisher (packed with kit offer).



In plain water, canvas will float for approx. 15 hours or more. Using LST Low Surface Tension WET WATER, canvas square will sink in 7 seconds.



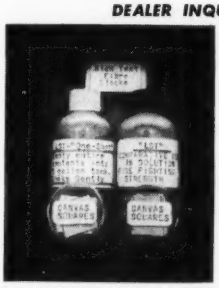
In WICK ABSORPTION TEST fire will be sustained for 10 minutes before flame is extinguished by slow penetration of plain water. Using LST Low Surface Tension WET WATER, flame is completely extinguished within 3 minutes . . . over 300% more efficient than plain water.

CONTENTS OF LST TEST KIT

LST Combination Test Kit & WET WATER contains all the materials necessary to perform N.F.P.A. CANVAS WETTING TEST and WICK ABSORPTION TEST:

12 Canvas squares (Mt. Vernon No. 6 Grade) 2 Wick absorption Blocks; 2 plastic test containers; 1 poly bottle of LST ONE-SHOT to treat 5 gallon pump or tank extinguisher; 1 Poly bottle of LST 1% solution (Fire fighting strength) for demonstrating and comparative testing; 1 direction sheet for conducting WETTING TEST and ABSORPTION TEST quickly and accurately.

DEALER INQUIRIES INVITED.



SEND FOR THIS LST COMBINATION TEST KIT AND WET WATER OFFER.

A $2.10 value for only $1.00

Professional Fire Chemical Co., 17 W. 60 St., N.Y. 23, N.Y.
PLEASE SEND:

_____ LST Combination Test Kit & Combination Offer which includes Test Materials. List Price $1.50 PLUS LST ONE-SHOT, List Price $.60. Total Value $2.10 for only $1.00. FREE DELIVERY

_____ Doz. LST ONE-SHOT @ $7.20 per doz. FREE DELIVERY

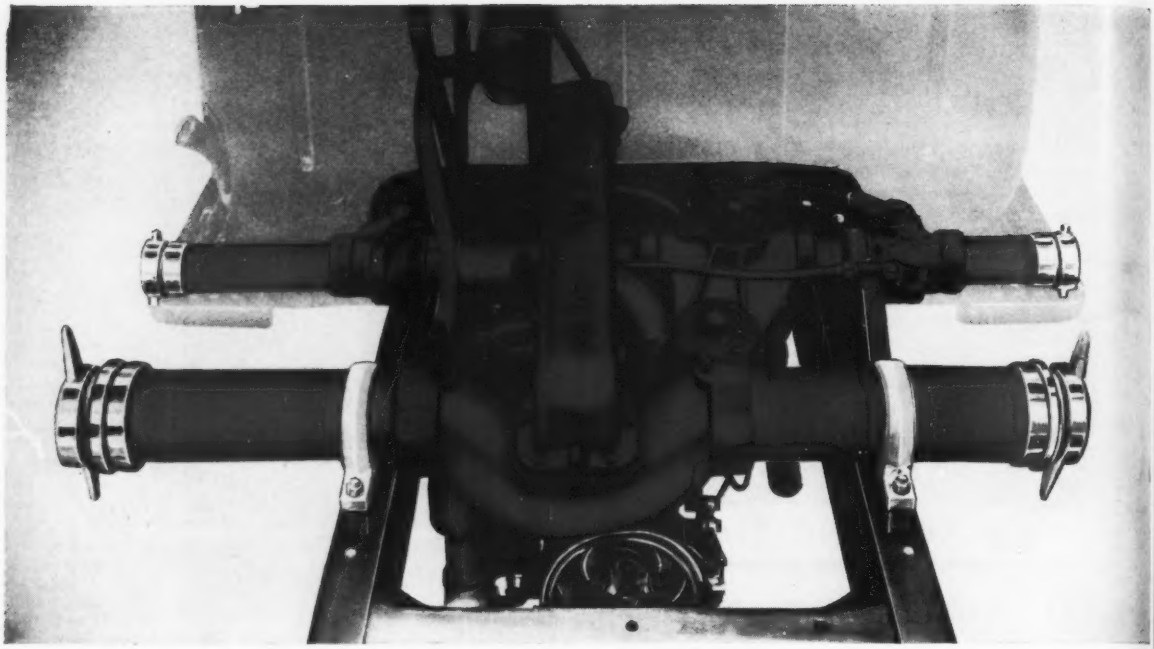
_____ LST CONCENTRATE @ $3.50 per Gal.; in 5 gallon cans only. FREE DELIVERY in 10 gallon lots or more.

Your Name_____ Rank_____

Fire Company_____

Address_____

City_____ Zone_____ State_____



GET 3 BIG ADVANTAGES

WITH THE VERSATILE BARTON-AMERICAN DUPLEX-MULTISTAGE CENTRIFUGAL PUMP

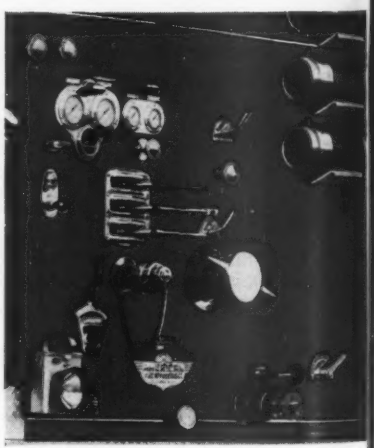
You'll get faster control–and higher performance–with a Barton-American Type DMA Pump. These three outstanding design features explain why –and *only* the DMA has them all!

1. In *one* compact pump unit, you have a choice of three pressure and volume selections: High volume at normal pressures, normal high pressures, and extremely high pressures for fog guns. All operate at moderate engine speeds . . . and by merely shifting a *single* lever.

2. Two impellers, *independently* shafted and geared, will operate alone or together in series. Volume pump handles dirty water *without* damage to the high pressure pump.

3. This Barton-American Duplex multistage centrifugal pump has one-point lubrication similar to truck transmission housings. All bearings are bathed in oil inside . . . there's no need for water lubrication.

Yes, these unique, advanced features, plus automatic pressure-operated valves and other advantages provide you with *outstanding* fire-fighting power. For full details, write for . . .



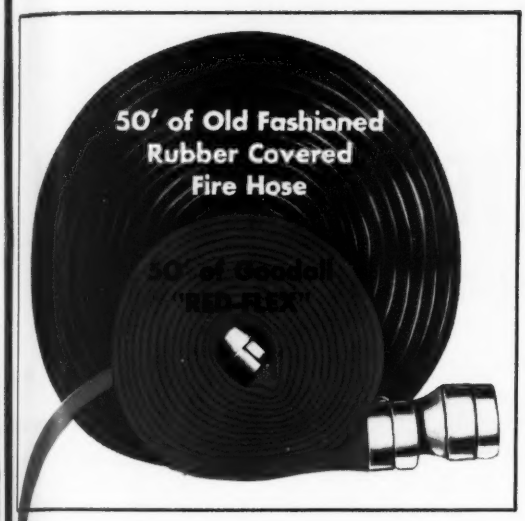
Typical pump panel. One lever gives you instant selection of *Capacity-Pressure-Series* operation—a Duplex Pump feature.

BULLETIN 8733
DMA Duplex Multistage Centrifugal Midship Pumps

BULLETIN 8734
DMB Duplex Four-Stage Midship Pumps

★ AMERICAN ★
FIRE PUMP COMPANY

AMERICAN FIRE PUMP COMPANY • P. O. BOX 219-A • 803 MAIN STREET ROAD • BATTLE CREEK, MICHIGAN



GOODALL "RED-FLEX"

World's Finest Lightweight

NEOPRENE COVERED FIRE HOSE

Latest Addition to the Modern "FIRE-FLEX" *Line*

U. S. PATENT NO. 2392967

"RED-FLEX" *Cuts Your Budget...*
Because "RED-FLEX" *Stays Dry!*

1—MILDEW-PROOFED
2—WATER-PROOFED
3—NO HOSE TOWERS
4—NO MECHANICAL DRYERS
5—NO HUMIDITY MACHINES
6—NO EXCESSIVE SPARES

CHEMICAL, OIL AND GREASE RESISTANT
STANDARD SIZES... 400 LB. TEST

Hose Size	Wgt., 50', Uncoupl'd	50" Coil Diameter
1½"	20 lbs.	19"
2"	29½ lbs.	21"
2½"	37 lbs.	21"

Goodall Rubber Company **Date**_____
448 Whitehead Rd., Trenton 4, N. J.

Gentlemen:

☐ Send complete information on "RED-FLEX" Fire Hose
☐ Have representative call with details and prices.

Company_____
Address_____
City_____ Zone_____ State_____
Attention of_____

Standard of Quality—Since 1870

HOSE • BELTING • FOOTWEAR • CLOTHING
AND OTHER INDUSTRIAL RUBBER PRODUCTS

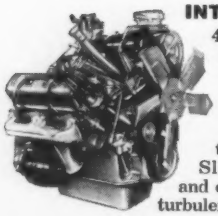
GOODALL *Rubber Company*

GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.
Branches and Distributors Throughout the United States and in Canada

New INTERNATIONAL V-8 Chassis with

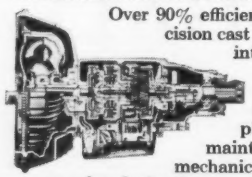
DUAL IGNITION SELECT-O-MATIC TRANSMISSION

SURE OPERATION FROM "ROLL 'EM" TO "PICKUP"!



INTERNATIONAL dual ignition
461 and 549 cu. in. displacement and standard 345 cu. in. displacement V-8's are true low stress engines and proved to operate at maximum rpm. By-pass cooling and alternating valve system adds long compression life. Slipper-type heavy dome piston and combustion chamber creates high turbulence and even burning.

INTERNATIONAL Select-O-Matic Transmission.



Over 90% efficiency due to mirror smooth precision cast converter surfaces. Oil filter on intake side gives continued protection to torque converter, extends operational life. Conventional gear train simplifies normal and extended maintenance, makes it easy for any mechanic to repair. Converter and clutch are of exclusive INTERNATIONAL design and manufacture.

Take your choice of either a husky INTERNATIONAL 461 or 549 cu. in. V-8 engine—up to 257 horsepower! Both engines give you the first 3-stage dual ignition system ever offered in a volume produced fire truck chassis. You get sure, instantaneous action by turning a switch to fire both sets of plugs simultaneously or either set individually. You're assured of dependable, full capacity power with honest horsepower ratings—accurate pumping ratings. Pumping capacities up to 1,250 GPM!

To power dependability, add the extra safety of INTERNATIONAL Select-O-Matic transmission. New semi-automatic design eliminates the clutch pedal. Fast-working "Magic Button" on the gear shift lever reduces shifting time. The driver keeps maximum attention on the road, yet retains the safety of personal gear selection. Simplified operation makes it easy for anyone to take over in an emergency!

Get complete details from your INTERNATIONAL Dealer today. He has the trucks and the know-how to help you choose a fire truck chassis to meet any need!

The INTERNATIONAL COE model VCO-196 shown above combines forward control vision with tilt action cab for fast, complete engine accessibility. Choice of five axles and 401, 461 and 549 cu. in. V-8 engines virtually custom-tailors truck to job. Other INTERNATIONAL Trucks range from light-duty rescue units to 33,000 lbs. GVW models, with "six" and V-8 engines from 141 to 257 hp.

INTERNATIONAL® TRUCKS
WORLD'S MOST COMPLETE LINE

® International Harvester Co., Chicago • Motor Trucks • Crawler Tractors • Construction Equipment • McCormick® Farm Equipment and Farmall® Tractors

AWARD-WINNING PLANT

CUTLER-HAMMER, INC., LINCOLN, ILL.
DESIGNER—ENGINEER—BUILDER:
THE AUSTIN COMPANY, CLEVELAND

SAFEGUARDS ITS PROPERTY WITH ADT *Automatic* PROTECTION

Selected by FACTORY magazine as one of the nation's Top Ten for 1959, the new Cutler-Hammer low-voltage distribution apparatus plant is a model of clean building lines and uncluttered working space—with plenty of growing room.

Automatic operations within the 300,000 square-foot plant are used wherever possible, even to safeguards against fire and intrusion.

ADT Sprinkler Supervisory and Waterflow Alarm Service maintains a continuous, automatic check on water supply to the sprinklers and will automatically summon fire fighters in case of fire. In unsprinklered plant areas, ADT Aero Automatic Fire Alarm Service will automatically detect and report a fire in those vital first few minutes. Failure of Cutler-Hammer watchmen to signal while on patrol will result in prompt investigation.

ADT SERVICE CAN HELP YOU, TOO...

Whether your project is old or new, sprinklered or unsprinklered, there is an appropriate ADT Automatic Protection Service to meet every requirement. An ADT specialist will show you how combinations of *automatic* services can safeguard property, profits, and employees' jobs, at lower cost than other, less effective methods. Call the ADT sales office listed in your phone book; or write to our Executive Office.

Controlled Companies of

AMERICAN DISTRICT TELEGRAPH COMPANY

Executive Office: 155 Sixth Avenue, New York 13, N. Y.

A NATIONWIDE ORGANIZATION

ADT

SNAP OUT FOR FILING

HOWE

Protects the Nation

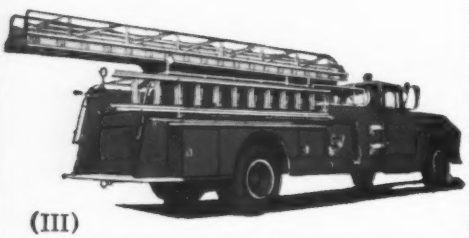
HOWE BUILDS *Only* FIR

Shown on these pages are both basic and special features of Howe design, along with illustrations of representative fire trucks recently built. Each of these trucks was built to meet the specific requirements of the locality in which it was to be used. "Custom-building" is the keynote of our operation—and of our success.

A history of four generations in the construction of fire apparatus goes to prove that HOWE builds the finest—and builds to last!

(I)

(II)

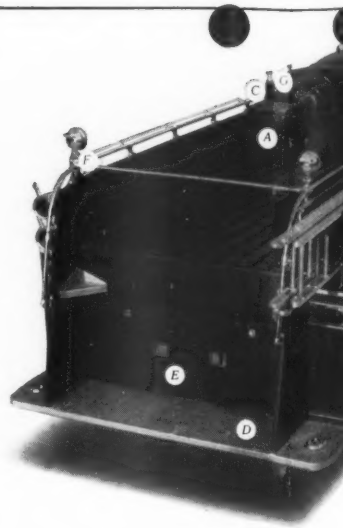


(III)

HOME

A. The HOWE combination air vent and booster tank filler has proven to be spill-proof. Designed and developed by HOWE through years of research.

B. HOWE hose reel bearings are heavy cast bronze for smooth operation and long life, and combine with a two shoe friction brake, with positive adjustable tension.



The above view shows the standard body const features labeled and illustrated. The HOWE de demonstrate to you all the optional features ava the best equipment that will serve your commun

CUSTOM-BUILDING i

The six illustrations depicting fire trucks recently built HOWE FIRE APPARATUS CO., are typical of the varied models available. All trucks built by HOWE may include pumping capacities up to 1500 gals. per minute; as many as twelve compartments for equipment, clothing and stretchers; a compartment for heating hose reels, pump, piping and gages with access doors on each side (IV) (VI), and rear windshield for protection of firemen. HOWE pioneered two-pump installations including a high-pressure and capacity pump—the famous Dual Fire Fighter.

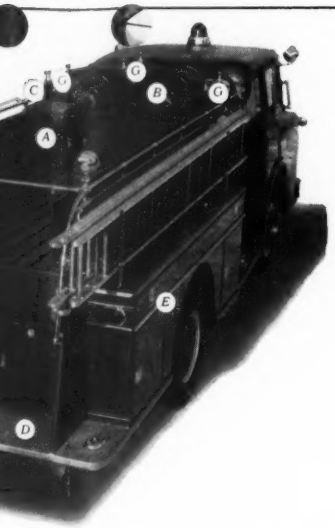
Tilt-forward cab construction (IV) (VI) is a most popular feature because it provides short turning radius, excellent visibility and easy access to engine. Just recently, HOWE has also made available the cab-forward construction, which provides the same advantages.

For the greatest versatility and economy, HOWE builds the famous "Defender" line (V), which provides 3- to 5-man cabs, enclosed-, semi-, and canopy-cab, and also the new cab-forward. The "Defender" line permits the customer to choose the type engine he prefers and those available are

HOME—Symbol of community strength.

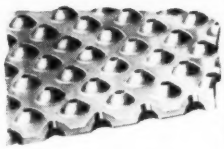
HOWE—Silent Sentinel in more than 10,000 communities . . . offering confident, dependable and economical fire protection for more than four generations. Your HOME . . . best protected with HOWE equipment.

FIRE TRUCKS ...and HOWE BUILDS THE FINEST



d body construction of a HOWE fire truck, with
e HOWE dealer in your area is well-equipped to
features available and will ably advise you as to
your community.

C. All HOWE bodies incorporate a removable side panel which allows full access to the pump and pumping mechanism.

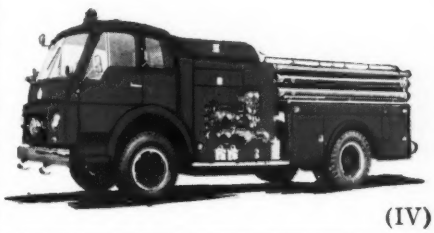


D. Running boards on HOWE trucks are made of Kass Safety Tread, providing positive footing for firemen.

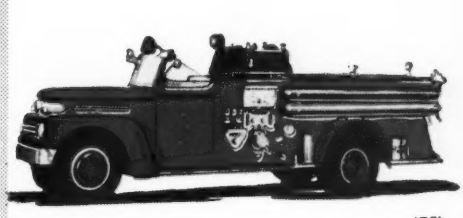
E. Stretcher compartment and compartments for miscellaneous equipment.

F. Highly polished railings installed in matching rail brackets and matching streamlined rear posts.

G. Three sets booster hose rollers mounted on pressed steel brackets. Suction hose ladder brackets, and extinguisher holders also pressed steel for smooth finish.



(IV)



(V)

(VI)

NG is the Keynote . . .

e Waukesha, the Continental and the Hall-Scott, all with the dual ignition feature.

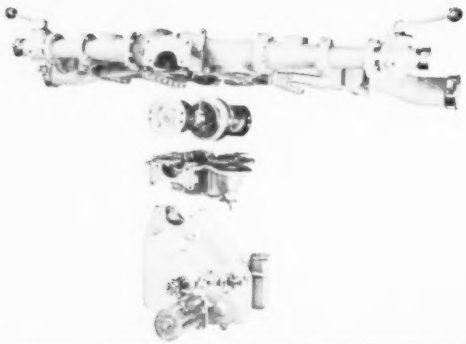
Illustration III further shows the range in which HOWE operates, depicting the HOWE Junior Aerial Ladder construction. This vehicle can be built with all hydraulic power or all electric power, as preferred. The aluminum aerial ladders are available in either 55′ or 65′ lengths, and when space is limited, may be mounted over the rear axle. Service ladder trucks are also built by HOWE.

It may be noted from the illustrations that the HOWE Company maintains its leadership in design with new construction developments and newly engineered products. Construction includes Howe's famous streamlining of body to cab, often copied but never equalled.

Contact the HOWE representative in your area, or write direct to HOWE FIRE APPARATUS CO., 1402 West 22nd St., Anderson, Indiana, for **complete assistance** in working out the construction of the fire apparatus that will meet the needs of **your** community. For all types of fire fighting equipment, see our General Catalog.

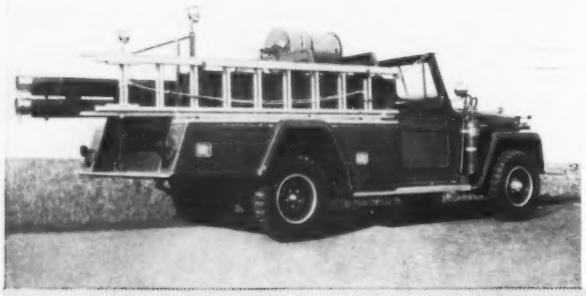
"dependable fire apparatus since 1872"

HF HOWE



Waterous pumps, standard of all HOWE apparatus, are made for long life and matchless dependability by incorporating the following features: 1. oil-lubricated ball bearings are sealed; 2. bronze "wear-rings" easily replaceable; 3. forged alloy steel, SAE splined shafts and full ball bearing supports throughout drive line; 4. semi-steel or bronze case; 5. stainless steel or bronze parts at points of close-running tolerance; 6. bronze transfer valve operates in bronze cage, bronze valves have non-corrosive seat; 7. Electro-Matic power operated controls available; 8. helical gear drive units for smooth, quiet operation.

Photo at left shows a HOWE crash fire truck in action, fighting a gasoline-oil fire to simulate a crashed airplane. These trucks were developed for the U. S. Coast Guard to meet specific requirements. Also available are other models customized to meet specific requirements in light, medium and heavy duty class for not only airfields, but oil fields, oil refineries and chemical plants.



HOWE Commando fire equipment mounted on Willys 4 wheel drive "pick-up" chassis, featuring performance, power, maneuverability and economy. "Gets there" regardless of road conditions. HOWE Commando Junior fire equipment mounted on famous Willys Jeep chassis "fills the bill" where smaller equipment is needed. Similar equipment available on other commercial "pick-up" chassis.

Contact the HOWE Representative in Your Area

Eastern States

Atlantic Supply Co.
Suffolk, Va.

Chase, H. R.
Coral Gables, Fla.

Cory, William R.
Rochester, N. Y.

Downing, Ken
Decatur, Ga.

Drake Robert W.
Fayetteville, N. C.

Duncan, George
Wilmington 99, Del.

Emsweller, R. P.
Morgantown, W. Va.

Etherington, D. S.
Washington Depot, Conn.

Falt, Leonard G.
Springfield 9, Mass.

Federal Sales & Eng.
Washington 4, D. C.

Fire Eq. Co. of Va.
McCollum, W. L.
Danville, Va.

Gardner, Jim
Wellsville, N. Y.

Howe Fire Ap. Sales
Karkalla, Thomas A.
Pittsburgh 36, Pa.

Kiggins, A. J.
Pittsburgh 36, Pa.

Ludwig, Joseph
Fullerton, Pa.

Maddox, C. O.
Fullerton, Pa.

McLaughen, George
Gastonia, N. C.

Morse, Earl Jr.
Newton, N. H.

Pauly, Robert
Lewistown, Pa.

Ring, Wm. J., Jr.
Edgewater, N. J.

Rysedorph, Ed
East Greenbush, N. Y.

Sandifer, Wm. M.
Columbia 2, S. C.

Sennott, Clifford
Boston, Mass.

Stauffer, T. R,. Jr.
Lititz, Pa.

Vought, J. W.
R. R. 1, Conklin, N. Y.

Waggett, William
Seneca, Pa

Central States

Anderson, Alfred
Sioux City, Iowa

Bradley, R. C.
La Crosse, Wis.

Eaton, V. B.
Hattiesburg, Miss.

Ellis, B. J.
Boyne City, Mich.

Fire Control Service
Servi, Mel
Pickerel, Wis.

Goehring's Fire. Sup.
Spearfish, So. Dakota

Hintz Fire Equip. Inc.
Fargo, No. Dakota

Howe Fire Equipment
Rekenthaler, F. A.
Morris, Dewey
Amarillo, Texas

J. J. O'Doherty Co.
Rocky River, Ohio

Lain, Yandell E.
Ada, Oklahoma

Lang & Manning
St. Louis 17, Mo.

Lewis, Emmett
Tiptonville, Tenn.

Lindsay, W. L.
Kansas City, Kansas

Mahoney, M. J.
Decatur, Michigan

Pittman, Mel
Corpus Christi, Tex.

Ramsey, Randolph
Anderson, Ind.

Schultz, E. L.
Pierceton, Indiana

Schultz, N. E.
Memphis 4, Tenn.

Shuman, Charles O.
Anderson, Ind.

Skinner, C. B.
Houston, Texas

Sullivan Equip. Co.
Wallace, Nebraska

Svensen, Elmer B.
Davenport, Iowa

Tracy, R. E., Sr.
Pomeroy, Ohio

U.S. Firemen's Equip.
Rhoades, M. E.
Chicago 44, Ill.

V. C. Malone & Assoc.
Birmingham 4, Ala.

Western States

Becker, Walter
Worland, Wyoming

Capital Fire Equip. Co.
Sacramento 8, Calif.

Howe Fire Equipment
Rekenthaler, F. A
Glendale, Arizona

Moriarty Enterprises
Great Falls, Mont.

Roney's Inc.
Portland 20, Ore.

Sands Trailer Co.
Glendale, Arizona

Sawtooth Co.
Boise, Idaho

Be sure to take it with you...
YOU'LL NEED IT!

The instant you arrive, you're fighting for *control* . . . and those *first few minutes are critical!* Your Motorola "Handie-Talkie" portable radios will help you get reports from every trouble spot . . . and relay instructions in *seconds.* You are in constant contact with all members of your fire fighting team.

For faster fire fighting, make sure that you have *enough* "Handie-Talkie" portables. Transistors, plated chassis and other improvements increase reliability . . . make this the smallest, lightest portable 2-way radio available. You also benefit from the long battery life and obsolescence-free design. And only Motorola can offer you a portable radio with a full 8 watts output. One of the 43 "Handie-Talkie" radios is ideal for your needs. Write for complete literature today.

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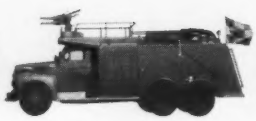
Motorola Communications & Electronics, Inc., 4501 Augusta Blvd., Chicago 51, Illinois, A Subsidiary of Motorola, Inc.

Glenn L. Martin Airport

Crucible Steel Co. of America



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Seattle-Tacoma Airport

U. S. Coast Guard

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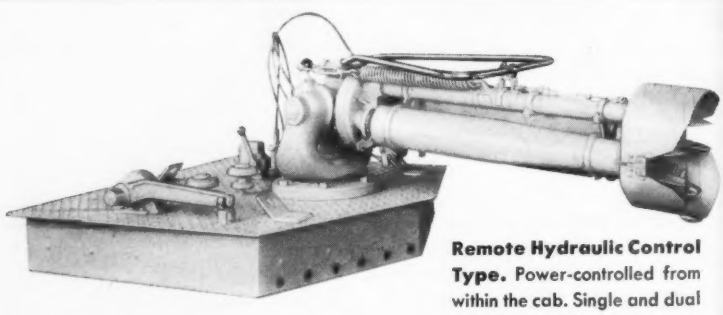
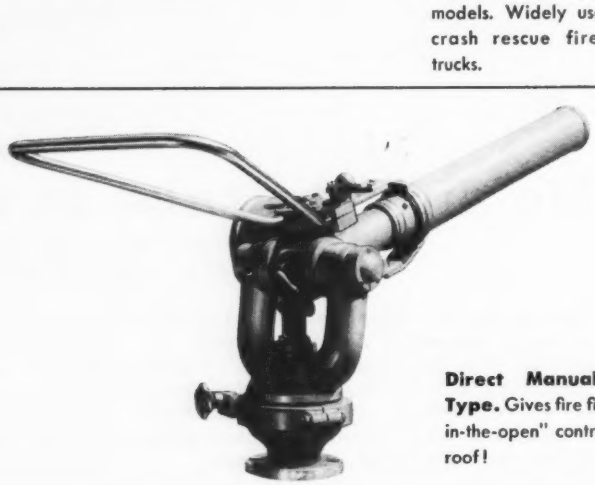
Most Complete Line of Sp

ALL ROCKWOOD TURRETS DISCHARGE
FogFOAM • SOLID FOAM STREAM
WaterFOG • SOLID WATER STREAM

Extended Manual Remote Control Type. Turret nozzles extend 10 to 20 feet above remote control station on deck or ground on standard units... greater remote extensions for special applications.



Remote Hydraulic Control Type. Power-controlled from within the cab. Single and dual models. Widely used on air crash rescue fire-fighting trucks.



Direct Manual Control Type. Gives fire fighters "out-in-the-open" control from cab roof!

Washington, D. C. National Airport

U. S. Air Force Type 0-12

Theodore Francis Greene Airport

Douglas Aircraft Co.

for AUG

Socony Mobil Refinery, Augusta, Kan. | Fairchild Aircraft Corp. | Cuba, N. Y. Fire Department | Royal Canadian Navy | Dayton, Ohio, Airport

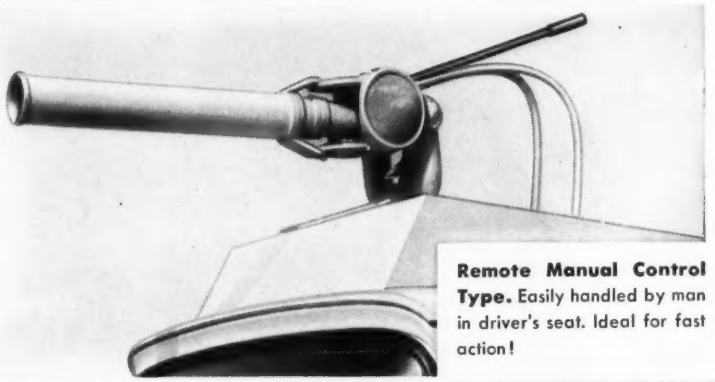
Specialty Turrets on the Market!

On the truck or on the ground, fire fighters can hit fires *harder* using ROCKWOOD Turrets! At airports and refineries . . . in municipalities and throughout industry . . . these advanced-design fire-fighting aids are constantly proving their ability to extinguish fires faster.

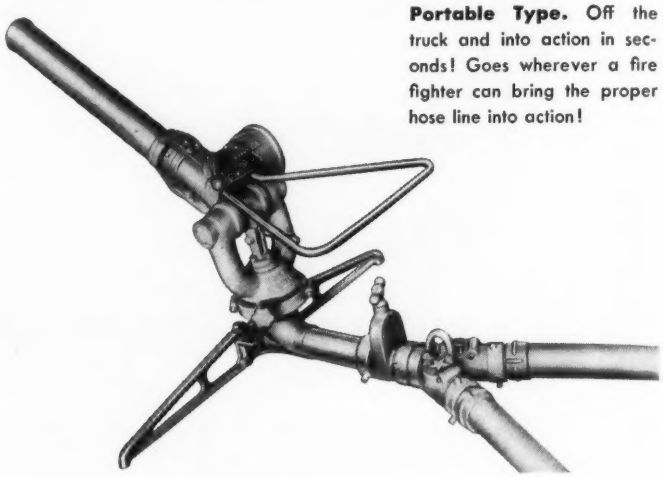
The reason is simple. ROCKWOOD Turrets provide plenty of both volume *and* versatility. They're designed to fight fires four ways: With FogFOAM . . . Solid FOAM Stream . . . WaterFOG . . . Solid Water Stream. What's more, all are easily adjustable on the fire line to meet changing fire conditions.

Produced by the world's largest manufacturer of specialty Fire-Fighting Turrets, ROCKWOOD Turrets are designed to give fire fighters an extra edge of efficiency on *most* types of fires. Make sure your department has the best tools to work with. Get full details on the complete line of fire-fighting products. Mail coupon now.

ROCKWOOD



Remote Manual Control Type. Easily handled by man in driver's seat. Ideal for fast action!



Portable Type. Off the truck and into action in seconds! Goes wherever a fire fighter can bring the proper hose line into action!

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Engineers Water... to Cut Fire Losses

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A Division of the Gamewell Company
Portable Fire Protection Division
442 Harlow Street, Worcester 5, Massachusetts

Please send me your illustrated booklet on Rockwood Fire-Fighting Products

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QUARTER-TURN

FULL FLOW

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OPERATES EASILY UNDER HIGH PRESSURE

Body painted red with polished bronze or chromium plated trim.
Pin Lug or Sensible Lug Swivel.

REG. U.S. PAT. OFF.

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629

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High pressure, emergency pumper style body with Hi Fog 1000 lb. pressure pump mounted on cab over engine chassis, featuring closed hose reel compartment with roll-up doors. (Patented)

H & H for special body design . . .

In addition to our line of dependable pumpers, 500—750—1,000 GPM—we have developed a specialized talent for special body design—crash trucks—emergency trucks—tank trucks—to mention a few.

We welcome the opportunity to work with, and put on paper, ideas from fire fighters who know what they need in the way of apparatus, that will best meet their local conditions. Write—

H & H TRUCK TANK CO., INC. 725 Tonnele Avenue, Jersey City, New Jersey

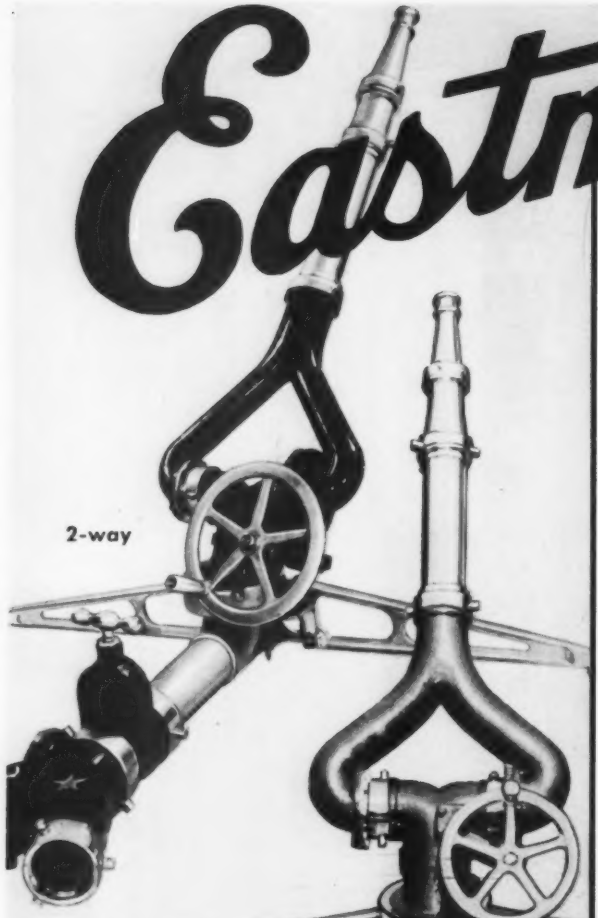
A few distributorships open.

for AUGUST, 1959

Eastman

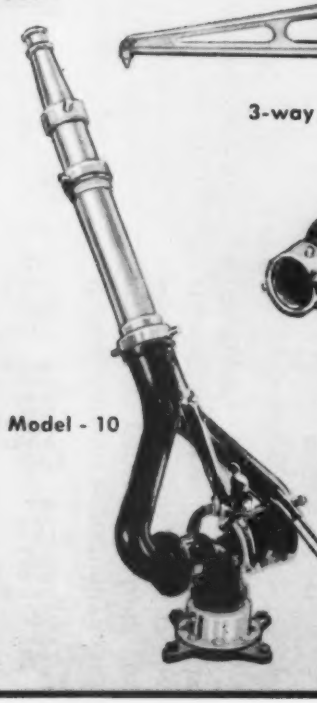
THE FINEST IN FIRE FIGHTING EQUIPMENT *for* FIRE DEPARTMENTS AND INDUSTRIAL PROTECTION

Since 1824



2-way

3-way



Model - 10

Model - 20

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Write for Bulletins
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Chief Wyrick—"Moon", as he is affectionately called by thousands of fellow-chiefs and friends—tells us: "Actually, we 'went Circul-Air' some 12 years ago when we started our expansion and modernization program. The quality and trouble-free performance of the first 3 Dryers made them the logical choice for the 3 newest stations just completed. We like your SERVICE POLICY, too, especially your program of supplying 'conversion kits' to bring older model Dryers up to present standards. Our 12-year-old ones are doing a terrific job with the new parts.

I hope you can visit our new stations soon and see the 5-section 'In-A-Wall' storage racks in each house, too, they are attracting a lot of attention with visiting chiefs who invariably comment on the unusual feature of removable hose trays storing hose in the same position as on Dryer trays and interchangeable with them."

CHIEF C. W. WYRICK
Greensboro, North Carolina

OVER 5000 Fire Departments Now CIRCUL-AIR *Their Hose*

APPROVED

The ORIGINAL *Electric Hose Dryer*

- Eliminates Ugly Hose Towers
- Dries Hose in a Few Hours
- *No* Radiant Heat—Can't Injure Hose
- Dries Fire Clothing, Too
- Keeps *All* Hose Ready for Service
- Reduces Station Construction Cost

Roto-Jet

"Automatic"
FIRE HOSE WASHER

WASHES • RINSES • DRAINS

- Hose is Self-propelled
- Washes Uniformly—Including Edges
- Uses Clear Water or Detergents
- Drains Hose Linings, Too
- One-man Operation • Portable

Porto-RAK

MOBILE HOSE STORAGE AND LOADING UNIT

- Racks 1800 ft. 2½" Hose
- Equipped with Locking Casters
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- Stores in a 9 ft. Space
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Write for **COMPLETE DETAILS**

THE GREATEST NAME IN FIRE APPARATUS

Seagrave PRESENTS

THE MOST COMPLETE LINE OF FIRE APPARATUS IN THE INDUSTRY

CAB FORWARD

IN PUMPERS AND AERIAL LADDERS

Perfect balance, safer construction, easier handling plus Seagrave advanced engineering places the Seagrave Cab-Forward far ahead of other cab-forward designs.

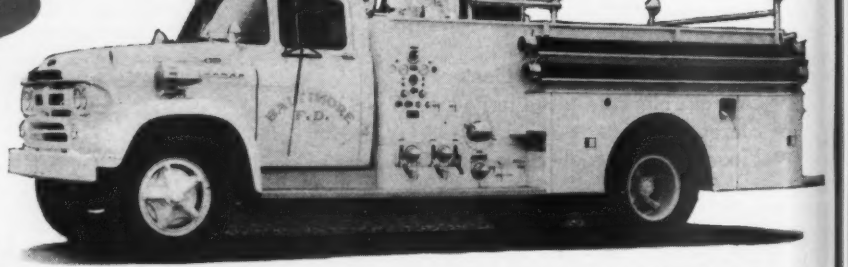
ENGINE--AHEAD-OF-CAB

IN PUMPERS AND AERIAL LADDERS

Seagrave continues the manufacture of the conventional engine-ahead-of-cab models with constantly improved and modernized designs.

COMMERCIAL

IN PUMPERS AND AERIAL LADDERS



THE SEAGRAVE CORPORATION — COLUMBUS 7, OHIO • King-Seagrave Ltd. — Woodstock, Ont.

BEST RATING*

ever given by underwriters to a fireproofing paint!

ALBERT® "DS"

At the first lick of flame, Albert "DS" forms a foam barrier that prevents fire from spreading . . . protects the coated surface from damage . . . effectively insulates against penetration of intense heat . . . radically reduces thermal conductivity of all materials.

Developed at the huge Albert Chemical Works in Wiesbaden, West Germany, Albert "DS" provides reliable, permanent and economical fire protection for all woods and wood-based products, plastics, and other building materials. Non-toxic, non-corrosive. **No** flammable vehicles. **No** poisonous gases at any time.

Easily applied by brush, paint roller or spray gun. Can be tinted and overpainted. Excellent adhesive and drying properties make costly priming or other pretreatment of even the smoothest surfaces unnecessary. Available in colorless, white and other colors.

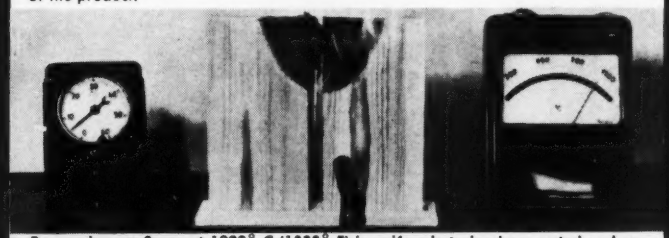
ALBERT PRODUCTS
Since 1858
100 Years of Leadership in Chemical Research

*Test by UNDERWRITERS' LABORATORIES OF CANADA†	130 sq. ft. on Douglas Fir	Distance of Flame Travel	Classification Factor
	Red Oak	19½ ft.	100
	Douglas Fir (2 coats)		
	No. 1	2 ft.	10.2
	No. 2	1½ ft.	7.7
	No. 3	1 ft.	5.1

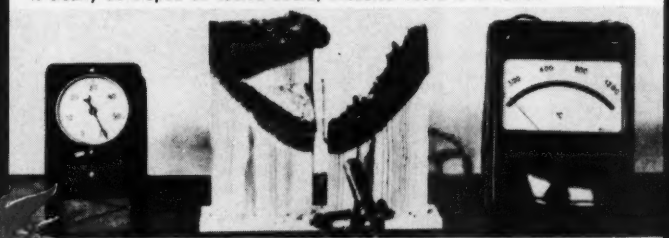
Laboratory heat inhibition test on steel sheet of 4-mm (0.16 in.) thickness exposed to direct flame of 1100° C (2012° F)	Temperature on rear side		
	Duration	Unprotected	Heated front side coated with ALBERT "DS"
	5 min.	285° C (545° F)	52° C (126° F)
	15 min.	360° C (680° F)	71° C (160° F)
	60 min.	(White Glowing)	105° C (221° F)

CLASSIFICATION 10 (Average 7.66)

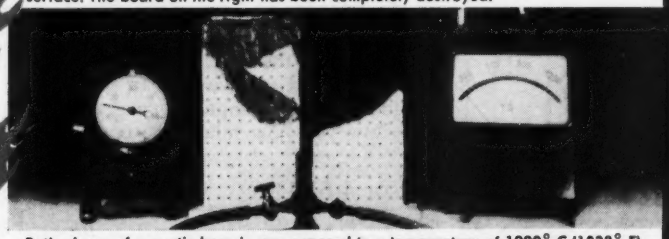
†Canadian and U. S. A. Underwriters' Laboratories have identical testing methods, based on following Standard:
Untreated red oak wood: Flame Spread Classification "100" ("combustible").
Cement Asbestos Board: "0" ("incombustible").
Faster burning building materials have Flame Spread Classification far in excess of "100" ("highly combustible").
Consequently, the lower the Classification Factor number, the better is the rating of the product.



Bunsen burner flame at 1000° C (1832° F) is uniformly trained on coated and uncoated boards, left and right, respectively. After 5 minutes, the foam barrier layer is clearly developed on coated board; uncoated board is in flames.

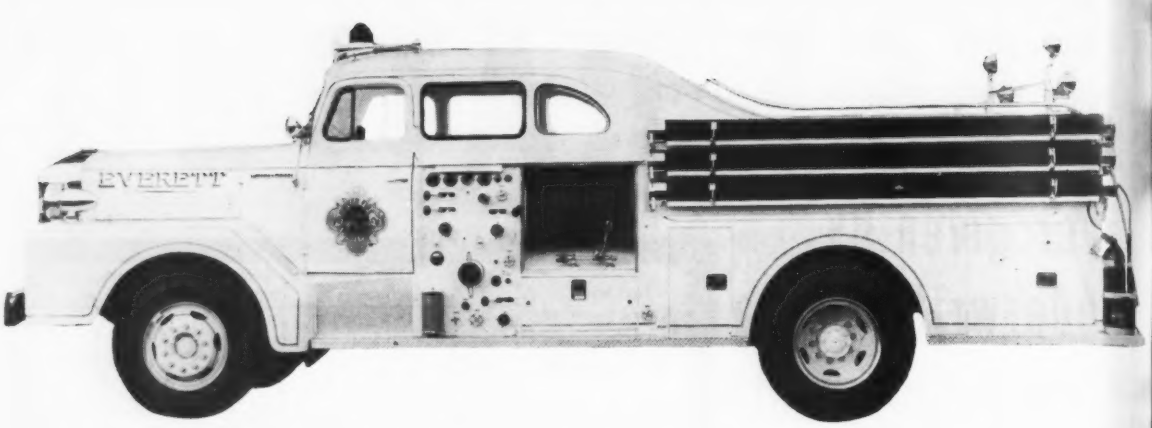


After 60 minutes of continuous exposure to the flame, a portion of the barrier layer was removed from the board coated with "DS" to expose the undamaged surface. The board on the right has been completely destroyed.



Both pieces of acoustic board were exposed to a temperature of 1000° C (1832° F) for 15 minutes. The acoustic board on the left, coated with Albert "DS", is undamaged under the foam layer, while the uncoated acoustic board has been almost completely consumed.

AMERICAN **VAMAG** COMPANY, INC., 1615 51st STREET, NORTH BERGEN, N. J.



CUSTOM BUILT TO THE INDUSTRY'S HIGHEST POSSIBLE STANDARDS

Whether your need is for a deluxe pumper, squad wagon, city service truck or special emergency vehicle—you can be certain that you'll get the biggest value for your fire company dollar when you leave responsibility to Brumbaugh.

AS BEAUTIFUL AS IT IS PRACTICAL

—and with all the up-to-the-minute features you'll be proud to own. Let us work out a design to fit your company's particular needs and show you how relatively simple it is to own a Bruco. Compare and weigh all the facts and you'll find Bruco is your best buy! Send for descriptive folders or better still let us arrange a demonstration for you.

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BRUMBAUGH BODY COMPANY ALTOONA PENNA.

100 West Plank Road, Altoona, Pa.

Limited number of DEALER FRANCHISES Available

PUMPERS
SQUAD CARS
CITY SERVICE &
EMERGENCY TRUCKS

DUO Safety

FIRE LADDERS
Now in FOUR GREAT SERIES

With DUO-SAFETY Exclusive Tongue and Groove Construction

No Hooks or Guides to Injure Hands! Jack-knifing!

Now, there's a Duo-Safety Ladder for every budget...for every use. The new Series 1200—an intermediate ladder—fills out the line to offer you a bigger choice of better ladders. Check the specifications below...you'll find the ladder for your requirements. Write for more information and prices.

Choose the Series to fit your needs!

SERIES 1000	For Pumper Use	24′ to 30′	2¾″ CHANNEL RAIL
SERIES 900	For Pumper and Service Trucks	24′ to 40′	3¼″ CHANNEL RAIL
SERIES 1200	For Service Trucks	35′ to 55′	3¾″ CHANNEL RAIL
SERIES 500	For Service Trucks	10′ to 60′	TUBULAR RAIL

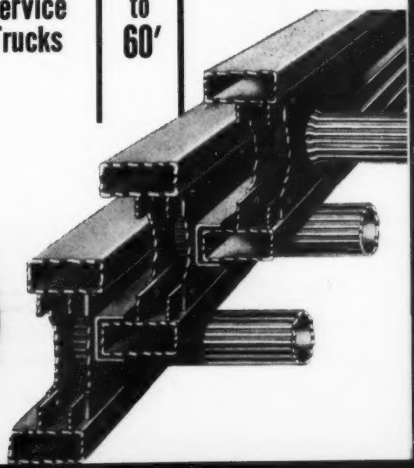
Including the new
INTERMEDIATE SERIES 1200

The new 1200 Series at budget fitting prices in the famous Duo-Safety line is an intermediate ladder to take care of a range of sizes where requirements are not sufficiently severe to necessitate buying the Duo-Safety heavy duty 500 Series tubular rail!

Write for complete information and prices!

For Great Strength, Extraordinary Safety!

Adapted nationally by fire departments as standard ladder equipment, the 500-A Series represents perfection of ladder design. Light weight, greater strength and extraordinary safety are incorporated into the Tubular Rail Construction of this great ladder. Available in all standard ladder sizes 10′ to 60′.



DUO Safety

DUO SAFETY LADDER CORP.

WEST NINTH AVENUE • OSHKOSH, WISCONSIN

Canada: La France Fire Engine and Foamite, Ltd., Ontario

Truly *Customized* equipment on your commercial chassis

SEE us at Booth No. 82, I.A.F.C. Conference. Aug. 31 - Sept. 3

Barton-American 4-stage, 750 GPM Pump entirely driven by main truck drive shaft.

. . . see why owners *stay* satisfied with American Fire Apparatus

At the start, you get much more of what *you* want when you select American Fire Apparatus. That's because you can specify *more features* that suit your particular needs. Then, because we prize satisfied owners, we protect you with superior quality construction all the way!

For example, *our Barton-American Four-Stage Pump is the* only *make driven* entirely *through the truck's main drive shaft*—never *through the lighter-duty transmission p.t.o. This eliminates danger of an overloaded p.t.o. And it assures you of lasting ruggedness that is trouble-free.*

Take a second look *personally.* You'll see *many* better-engineered features —reasons why owners *stay satisfied* with American Fire Trucks. Ask our representative for proof!

Contact your nearest American representative for full details.

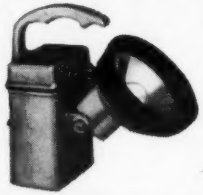
Equipped with famous Barton-American Front-Mounted Fire Pump.

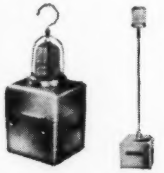
AMERICAN FIRE APPARATUS CO.

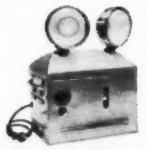
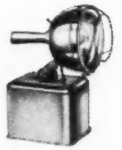
American

FIRE APPARATUS CO.

Main Office: Main Street Rd., Battle Creek, Mich. Plants at: BATTLE CREEK, MICH., MARSHALLTOWN, IA., STRATFORD, ONT.





A COMPLETE LINE OF COLORED WARNING AND FLASHING LIGHTS

MAKE YOUR OWN CHOICE!

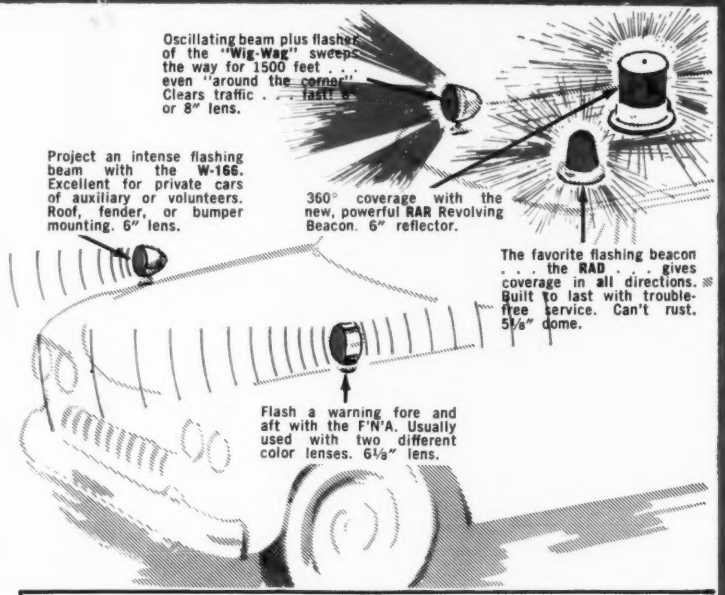
There is a Carpenter Warning Light for every need . . . every price range . . . made to the high standards you have come to expect from Carpenter-Lights. With virtually no exceptions, each of these lights is the most powerful, most rugged, and most dependable of its kind. Types illustrated are available with red, blue, amber, or mixed lenses. See our catalog for complete range of types.

"Specialists in Emergency Lighting for nearly a half-century"

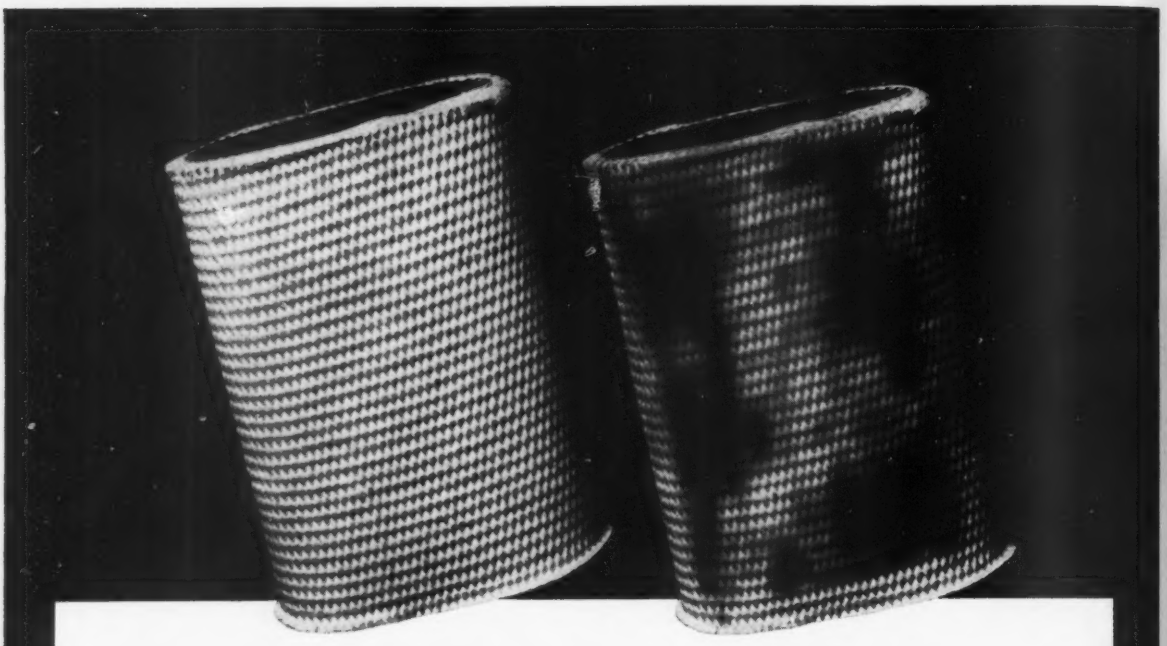
CARPENTER

MFG. COMPANY

939 Bradley Street • Somerville 45, Mass.


Oscillating beam plus flasher of the "Wig-Wag" sweeps the way for 1500 feet . . . even "around the corner". Clears traffic . . . fast! . . . 6" or 8" lens.
Project an intense flashing beam with the W-166. Excellent for private cars of auxiliary or volunteers. Roof, fender, or bumper mounting. 6" lens.
360° coverage with the new, powerful RAR Revolving Beacon. 6" reflector.
The favorite flashing beacon . . . the RAD . . . gives coverage in all directions. Built to last with trouble-free service. Can't rust. 5⅛" dome.
Flash a warning fore and aft with the F'N'A. Usually used with two different color lenses. 6⅛" lens.

FOR COMPLETE SPECIFICATIONS AND PRICES, **see your Carpenter Catalog or send for your free file copy today!**



WHAT MAKES THE DIFFERENCE IN THESE TWO?

Provar treatment! That's the difference.

Saturated with water, both samples were exposed to moist atmosphere, under conditions favorable to growth of mildew . . . *for six months, day and night.* The unretouched photos dramatize the effectiveness of the treatment.

Provar is an exclusive process developed by Republic Rubber for prevention of mildew and rot on Fire Hose. The six-month test confirmed the many, many service records that Provar treatment will not wash out or lose its effectiveness.

Illustrated below—the four fine grades of Municipal Fire Hose made by Republic Rubber. All are supplied with Provar protection against mildew and rot.

GOOD FIRE HOSE BY REPUBLIC RUBBER

CHAMPION—Dacron filler, test pressure of 600 lbs. Best grade Fire Hose made.

TOWER — Dacron filler, test pressure of 400 lbs.

CHARIOT — Cotton yarn, test pressure of 400 lbs.

TARGET—Cotton yarn, made to meet demand for heavy-duty hose at moderate cost.

REPUBLIC RUBBER DIVISION

LEE RUBBER & TIRE CORPORATION, YOUNGSTOWN 1, OHIO

INDUSTRIAL RUBBER PRODUCTS

INDIAN

FIRE PUMPS COMPLETE YOUR TRUCK EQUIPMENT!

...ucks without INDIANS — *like hot dogs without mustard* — are ...complete! Now is the time to add INDIAN FIRE PUMPS to your ...paratus. Rugged, portable INDIAN FIRE PUMPS are the biggest ...llar value you can buy in fire protection equipment.

...ey will handle as much as 40% of your calls — many 20 years ...d are still in use — replacement parts are available instantly ... and they use only CLEAR WATER!

...member* — there is only one INDIAN FIRE PUMP! Insist on ...DIANS — *they have no equal.

No. 90 INDIAN
(Sliding Pump Type)

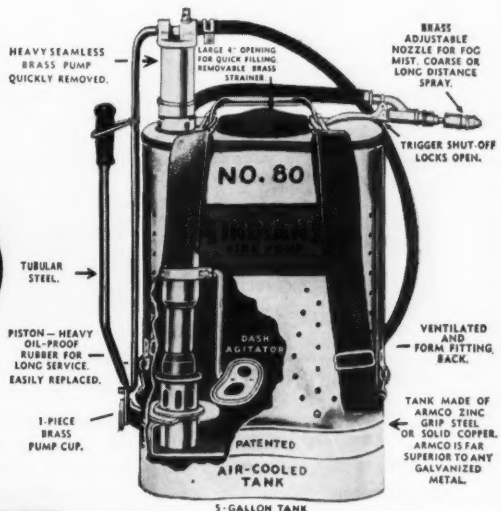
...orm fitting, ventilated tank permits constant circulation ...f air between tank and carrier's back. No dampness. ...eaves arms free for climbing ladders, etc. Highly pop...lar for many years.

Both Types Approved by Underwriters' Laboratories.

Fire fighting authorities who have experimented with a "WET WATER" powder mixed with the water in an **INDIAN FIRE PUMP** tank report it does an excellent job.

No. 80 INDIAN
(Lever Type Pump and Handle)

Heavy steel pump lever. Ventilated tank. 5 gal. capacity. Continuous high pressure. Armco zinc-grip steel or glistening solid brass tank. Strongest construction throughout. Has no equal.


HEAVY SEAMLESS BRASS PUMP QUICKLY REMOVED.
LARGE 4" OPENING FOR QUICK FILLING. REMOVABLE BRASS STRAINER.
BRASS ADJUSTABLE NOZZLE FOR FOG MIST, COARSE OR LONG DISTANCE SPRAY.
TRIGGER SHUT-OFF LOCKS OPEN.
NO. 80
TUBULAR STEEL.
PISTON — HEAVY OIL-PROOF RUBBER FOR LONG SERVICE. EASILY REPLACED.
DASH AGITATOR
VENTILATED AND FORM FITTING BACK.
1-PIECE BRASS PUMP CUP.
TANK MADE OF ARMCO ZINC GRIP STEEL OR SOLID COPPER. ARMCO IS FAR SUPERIOR TO ANY GALVANIZED METAL.
PATENTED
AIR-COOLED TANK
5-GALLON TANK

TYPICAL TESTIMONIALS IN OUR FILES

- ***"I can honestly say that INDIANS are worth their weight in gold".***
- ***"We consider INDIAN FIRE PUMPS to be the most important equipment in our department".***
- ***"We use nothing but INDIANS for a portable extinguisher. They're the best".***

SEND FOR NEW CATALOG!

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PACIFIC COAST BRANCHES

...ies Equipment & Rubber Co., Inc.
...Francisco 7 and San Jose, Cal.

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Fred E. Barnett Co.
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Seattle, Wash.

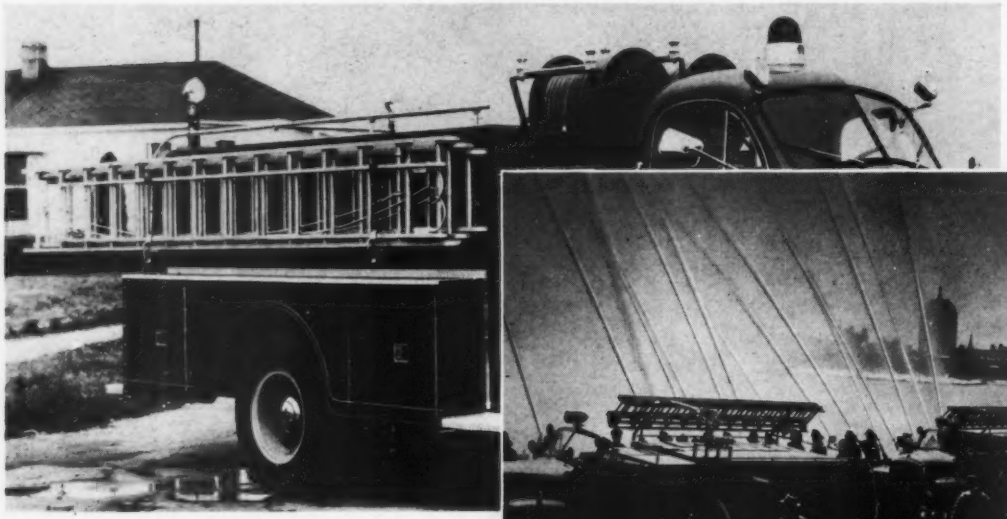
L. M. Curtis & Sons
Salt Lake City, Utah

CANADIAN AGENTS

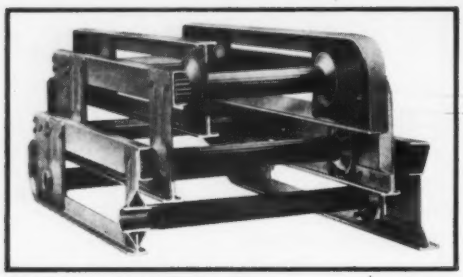
Fleck Bros. Limited
Vancouver, B.C.

C.S.Hickey & Sons, Ltd.
Hamilton

These versatile Pumpers are equipped with lightweight Alco-Lite Ground Ladders

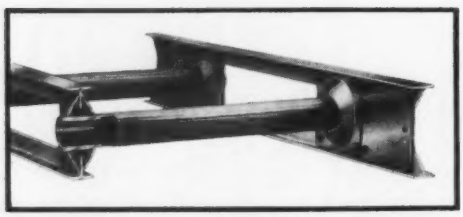


The Pumpers shown are products of Mack Trucks, Inc., Sidney, Ohio



Operate Automatically

Ladder sections extend — lock and unlock simultaneously. Spring loaded locks operate automatically. Channel slides the entire length of the ladder keep sections from becoming disengaged.



Permanent Rung-to-Rail Construction

Exclusive expansion bushing, rung to rail construction prevents rungs from twisting, turning, or breaking off.

They're lighter, easier to handle

The Alco-Lite Aluminum Ladders on the Mack Pumpers above feature open side rail, T-Channel design. All excess, weight adding bulk is eliminated. Only exclusive, Alco-Lite double gusset plate, expansion bushing construction makes this trim, modern design possible. These ladders more than meet any accepted tests for strength and safety.

Maintenance is almost negligible with Alco-Lite Aluminum Ladders. They are not affected by water, moisture, fumes or gases. They will not warp, rot, splinter, or burn.

Because they are lightweight and trim, Alco-Lite Aluminum Ladders are easier to handle and easier to lift. They save precious minutes and require less physical effort when used at fires.

When you want easy to handle, safe, and almost maintenance free fire ladders, specify Alco-Lite Aluminum Ladders.

Aluminum Ladder Company ALCO-LITE

W. Darlington St. Ext., Florence, South Carolina

PROJECT YOUR COMMANDS

...like a Harpoon!

Now you can reach out with your voice . . . half-a-mile or more . . . to deliver important commands and instructions.

Simply point your Audio Hailer where you *need to be heard*—press the trigger and speak in a *normal* tone. Let the *instrument* do the work . . . *without* KILLING your voice!

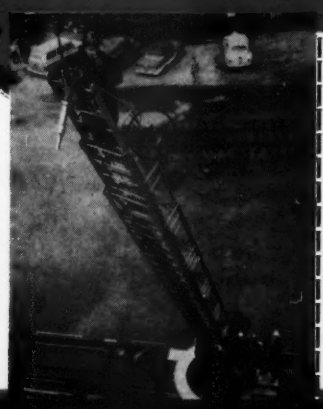
New "TP" (transistor-powered) model uses *4* latest-type *power*-transistors (*not* portable radio types) . . . yet runs on standard flashlight cells! *More* power—*more* range—at negligible maintenance cost. Patented "anti-feed-back" design overcomes "howling"—in a compact, one-hand, 5¾ lb. unit. Costs far less than *any* type of portable voice equipment of similar power. TRY it yourself—mail coupon below.

AUDIO

('TP') HAILER®

transistor-powered

PORTABLE MEGAPHONE



Midland (Penna.) Fire Department uses Audio ***Guider,*** mounted on fly-ladder of aerial —with standard ***Hailer*** on the ground— to create unique, low cost "two-way" voice system. Coupon brings details.

AUDIO EQUIPMENT CO., INC.

75 HARBOR ROAD, PORT WASHINGTON, NEW YORK

☐ Send brochure, with prices, on Audio Hailer.
☐ Send details of "two-way" aerial voice system.
☐ Have your local dealer make demonstration.

Fire Chief
(Or Safety Engineer) .....

Dept. (or Company).....

Town or City .....

Zone (if any).....State.....

NEW *Porter*® Hose eliminates drying, resists toughest wear

All-"Dacron" double jacket. There's no need now for costly drying equipment, or for stand-by hose. New all-"Dacron" Porter Deluxe Bonded Hose makes drying operations obsolete, and lasts many times longer under severe dragging and scuffing than other types of double-jacket fire hose.

This new hose, with a rubber bond between the two jackets of DuPont "Dacron" polyester fiber, can be dragged many miles without fraying, and can be left wet on the truck without fear of mildew. No drying, no spare hose needed. And the new Porter all-"Dacron" hose gives more than five times the wear of cotton-jacket hose.

A rubber-bonded double jacket of "Dacron" all around is the secret behind the new mildew-proof Porter Deluxe Bonded Fire Hose.

Get all the facts on this remarkable new money-saving fire hose. Ask your Thermoid distributor, or write *Thermoid Division, H. K. Porter Company, Inc., Tacony & Comly Sts., Philadelphia 24, Pa.*

THERMOID DIVISION **PORTER** **H.K.PORTER COMPANY, INC.**

PORTER SERVES INDUSTRY: with Rubber and Friction Products—THERMOID DIVISION; Electrical Equipment—DELTA-STAR ELECTRIC DIVISION, NATIONAL ELECTRIC DIVISION; Copper and Alloys—RIVERSIDE-ALLOY METAL DIVISION; Refractories—REFRACTORIES DIVISION; Electric Furnace Steel—CONNORS STEEL DIVISION, VULCAN-KIDD STEEL DIVISION; Fabricated Products—DISSTON DIVISION, FORGE AND FITTINGS DIVISION, LESCHEN WIRE ROPE DIVISION, MOULDINGS DIVISION, H. K. PORTER COMPANY DE MEXICO, S.A.; and in Canada, Refractories, "Disston" Tools, "Federal" Wires and Cables, "Nepcoduct" Systems—H. K. PORTER COMPANY (CANADA) LTD.

THE INSIDE STORY

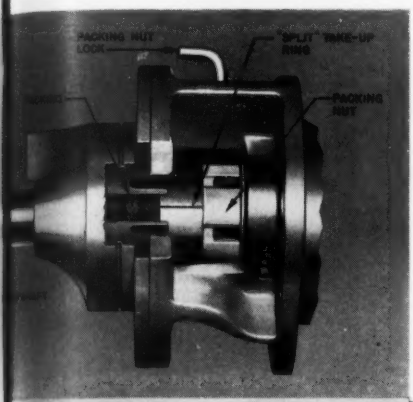
Why It PAYS to Specify HALE

To form a sound judgment on whether the pump you specify will stand up under long hours of gruelling punishment, you need to know what's inside it—the HIDDEN reasons for enduring quality, efficiency and dependability.

To help you form such a judgment, here is just a part of the "inside story" on a typical Hale Fire Pump.

Not only the obviously important parts—such as Impellers, Shafts, Gears, Discharge Valves, Packing—but ALL parts of Hale Fire Pumps are carefully designed, painstakingly tested and subjected to continuous research for possible improvement, SIMPLIFICATION and increased efficiency.

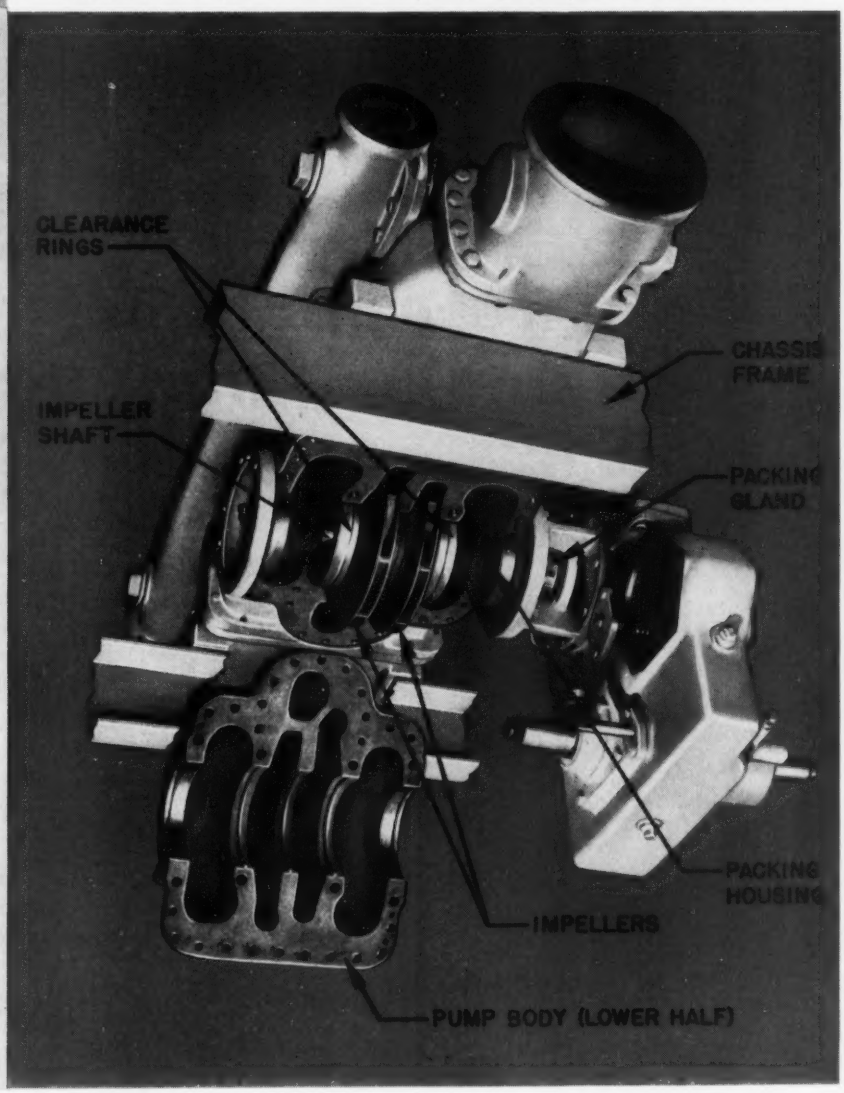
That is why Hale Pumps have won the respect of users all over the world.



HALE PACKING GLAND

Hale Pumps require only one Packing Gland, located on low-pressure (suction) side. CUTAWAY shows why it is so easy to adjust: (a) Requires no special tools. (b) Packing nut automatically locks in place. (c) Design insures even "take-up" of packing—no possibility of cocking. (d) Split take-up ring permits easy replacement of packing rings—which are water sealed and water cooled. (e) Shaft under packing is super-finished to insure longer packing life.

BELOW: Underframe view of Hale 2-Stage centrifugal pump with priming pump removed.



HALE "Inside" PLUS FEATURES

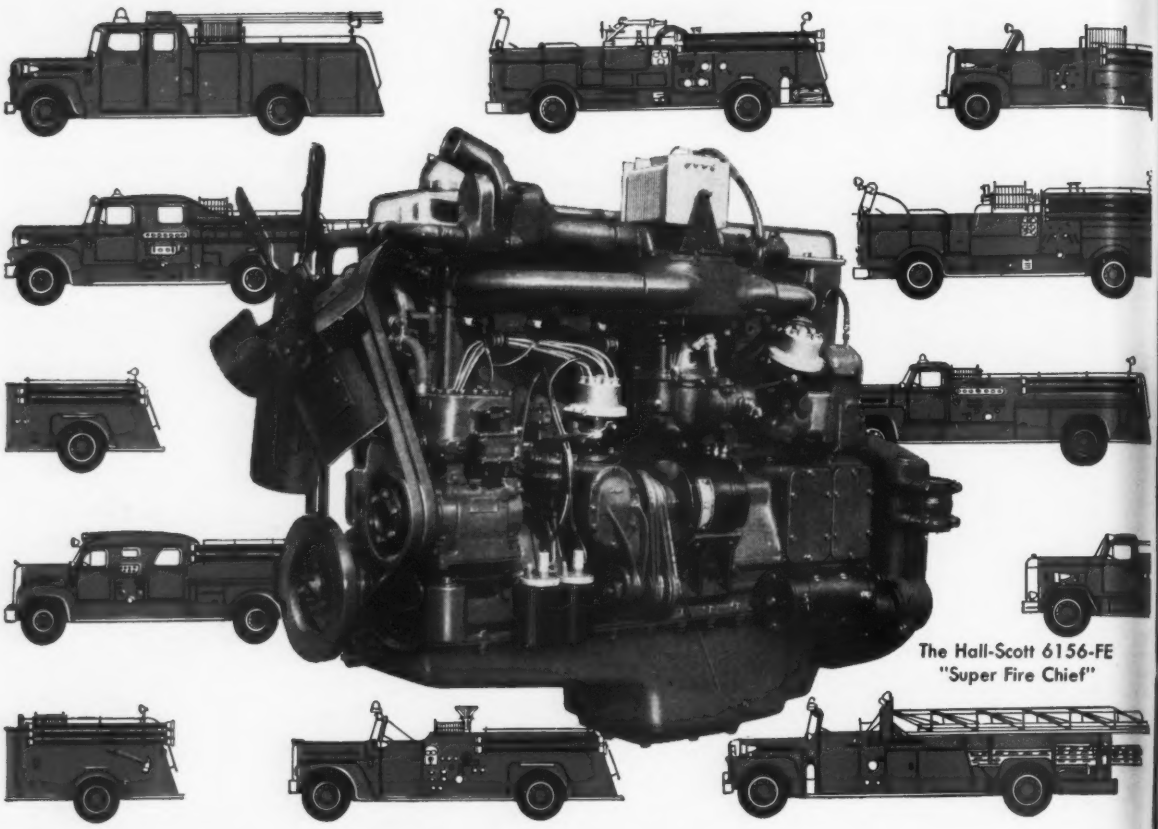
- SIMPLICITY OF DESIGN with Large, Smooth Waterways—Wide Pressure—and—Volume Range.
- High Efficiency for Maximum Performance at both high and low pressures.
- Designed for MODERN High-Powered Engines.
- GEARS—Carefully made by HALE to insure maximum strength and smooth operation; quality product resulting from constant research plus many years of experience.
- IMPELLERS—Cast at HALE; HARD BRONZE for Long Life. Special mixed-flow design for efficiency and superior "filling." Carefully balanced.
- SHAFTS—All shafts are super-finished under oil seals and under packing. Alloy steel heat-treated for extra strength.
- PRIMING PUMP—Rotary Gear Priming Pump—produces high vacuum. Bronze Rotors accurately fitted; carried on large shafts; oil lubricated.

Send for Up-to-date HALE BULLETINS

HALE FIRE PUMP COMPANY

CONSHOHOCKEN, PA.

Hale Fire Pumps are Built in ALL Standard Capacities



The Hall-Scott 6156-FE
"Super Fire Chief"

For Fire Apparatus, One Engine Line Stands Out . . .

HALL-SCOTT

Hall-Scott engines have established a reputation with fire prevention officials nationwide. Noted for their dependability and power, Hall-Scott engines give users the plus value of simple and economical overhaul through overhead camshaft construction.

You can choose your Hall-Scott power from two great series of engines: the "Fire Chief," ranging from 150 to 250 HP; and the "Super Fire Chief," from 200 to 325 HP. All Hall-Scott engines for fire apparatus service are designed and built to meet the exacting specifications *you* have set for this vital service.

Get full details on the Hall-Scott engine best suited for the equipment you plan to buy—or repower. These fine engines are available in all principal makes of fire trucks.

HALL-SCOTT ENGINES are now being serviced and produced by Hercules Motors Corp. For repair parts, or consultation on new engines for your equipment, call on the Hercules Distributor near you.

HERCULES ENGINES . . . *Sold and Serviced the World Over*

HERCULES

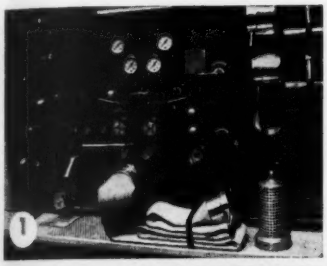
HERCULES MOTORS CORPORATION
Canton, Ohio

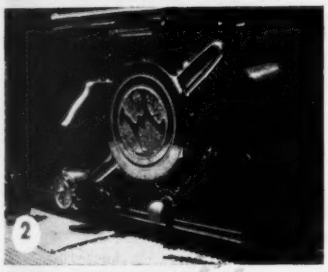
KEYSTONE HYDRANT VALVE *Story*

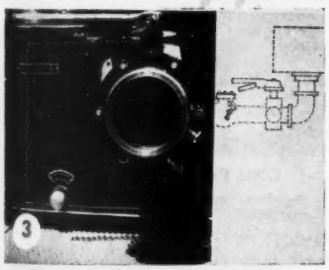
TOLD IN 10 PICTURES

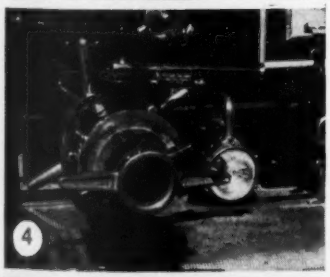
- **QUARTER TURN**
- **OPENS EASILY**

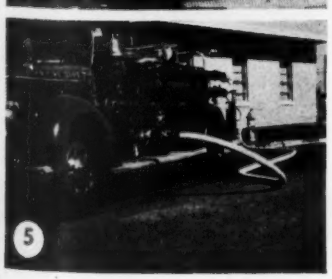
with opening diameter same as pump suction, permitting full flow of water at major fires











1 With the Keystone Hydrant Valve, a large suction hose can be carried attached to the pump suction with a wet pump permitting instant pumping of water on the fire truck and can be switched to hydrant water supply without stoppage of water, assuring complete safety at all fires. A connection of soft suction hose to the hydrant steamer becomes a one man operation with ease. (Not possible with 2½" valved suction)

2 The Keystone Hydrant Valve can be applied to old or new pumpers instantly and without any mechanical changes in pumper construction.

3 With the Keystone Hydrant Valve on pump suction, a swing check valve may be installed between the booster water tank and pump suction permitting tank suction to remain open at all times except when drafting water from rivers, creeks, etc. This feature makes operation of the pumper less difficult. (If the pump is carried wet (primed) and the 2½" valved suction is used, the swing check valve in line between the pump and tank would permit water to run out of booster water tank when attaching hose to the pump suction)

4 By applying a reduction hydrant adapter to a Keystone male thread will permit feeding pumper with 2½" fire hose. (This is also possible with the 2½" valved suction)

5 When using a reducing adapter on the male thread of a Keystone Hydrant Valve, the pumper can be fed direct from the 2½" outlet on the water hydrant with 2½" fire hose. (This can also be accomplished with the 2½" valved suction)

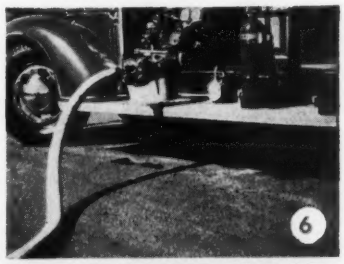
6 When using a reducer adapter on a Keystone male thread, the pumper can be fed through hundreds of feet of 2½" fire hose in relay from another pumper at a water hydrant or other source of water. (This is possible with the 2½" valved suction)

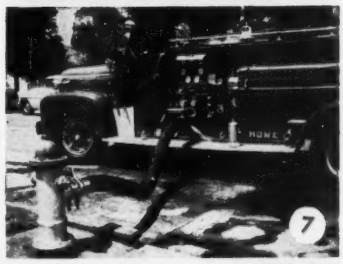
7 With an air bleeder on a Keystone Hydrant Valve, all air that is ahead of water in long hose lines can be bled from the hose before the valve is opened to relieve the shock on the pump and to prevent the stoppage of pumping. (This is possible with the 2½" valved suction)

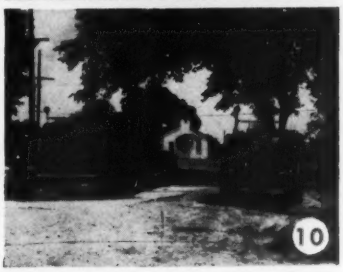
8 Application of Keystone Hydrant Valve connected to steamer outlet will permit second truck to get hydrant connected instantly without water stoppage when operating from hydrant to fire, eliminating delay. (Not possible with a 2½" valved suction on truck)

9 For oil refineries, chemical and other industrial plants that have conventional cast hydrants with steamer connections, the Keystone Hydrant Valve can be attached to the hydrant steamer and early arrived crew can pump on fire with 2½" outlet on hydrant to cool tanks, etc., while awaiting arrival of foam or other pumper. The foam or other pumper can connect hydrant without water stoppage during sequence of operation. (Not possible with 2½" valved suction on truck)

10 In the case when water mains are generous but hydrants not closely spaced, pumpers equipped with Keystone Valves on both suctions will permit six or more 2½" hose lines of short lengths with minimum friction losses and maximum volumes all without water stoppage during entire operation. (Utmost speed—low hose pressures—low engine speeds.) (This is not possible with the 2½" valve suction)







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Energy 600-lb. test hose treated with Sealcott "W" is dependable and easy to maintain. Sealcott "W" penetrates each fiber of both jackets, seals them from mildew and moisture. Energy packs compactly, too. Jackets have Dacron* filler cords which reduce bulk by 1/3, weight by 20%. * Reg. Trademark Du Pont Co.
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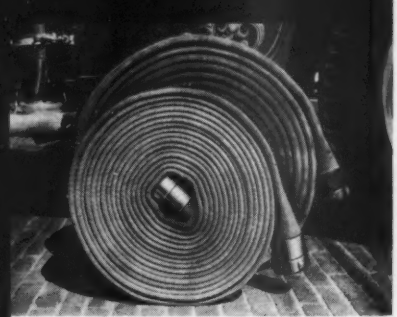

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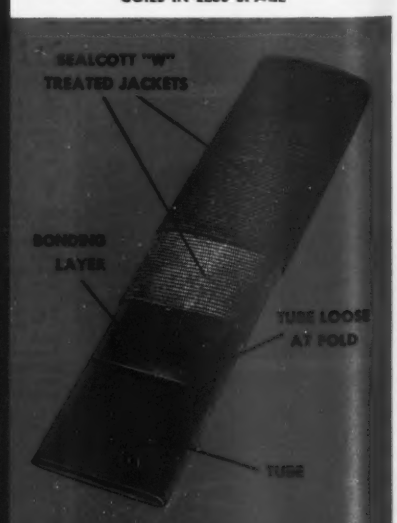

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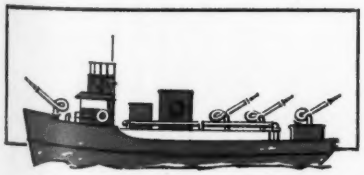

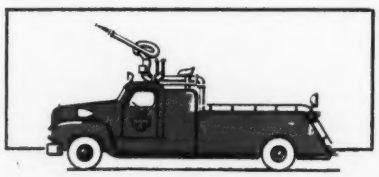

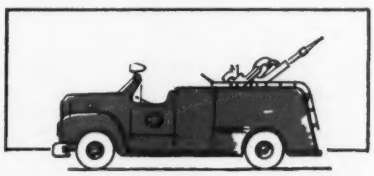

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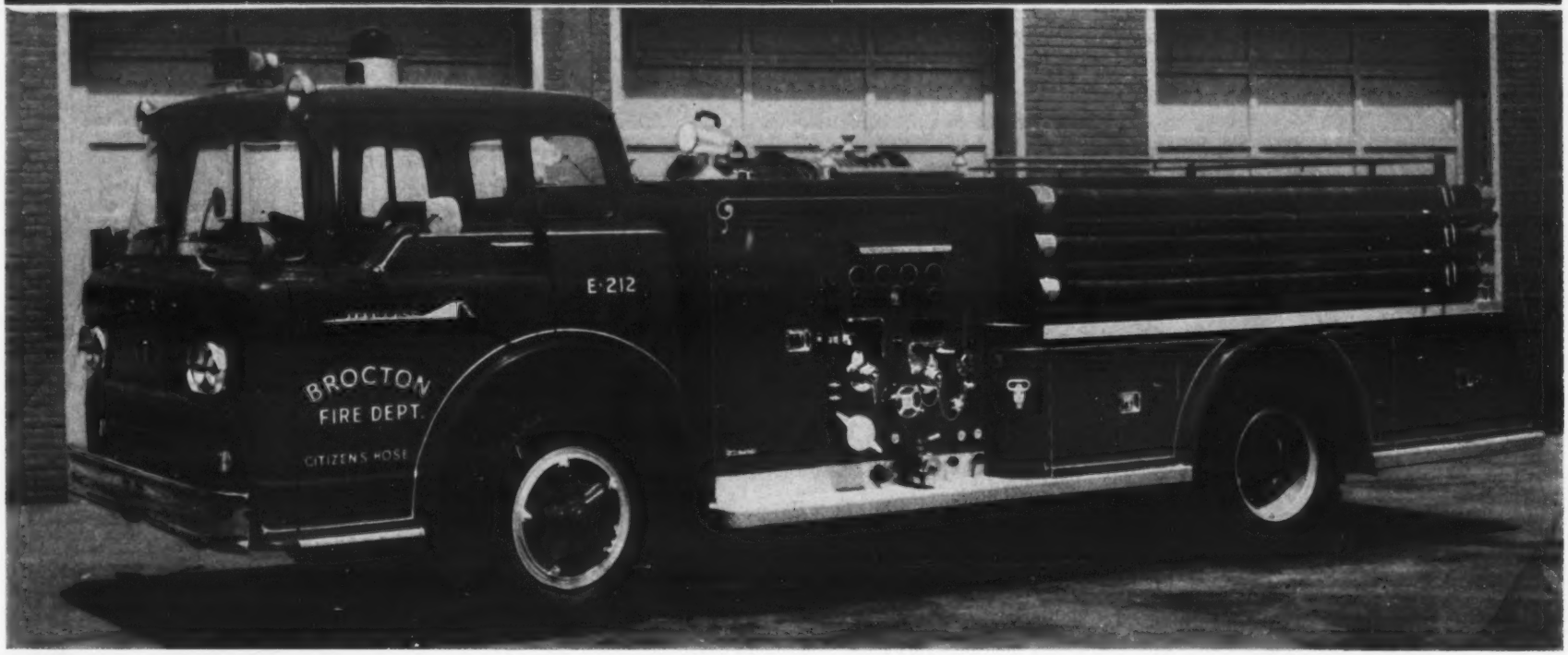

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It is features that make for dollar value and this job has really got it.

Check these sensational features:

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9. Built in automatic foam-wet water system.
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12. The strongest and finest built body in the entire industry. Dollar for dollar your best apparatus buy is a pumper built by

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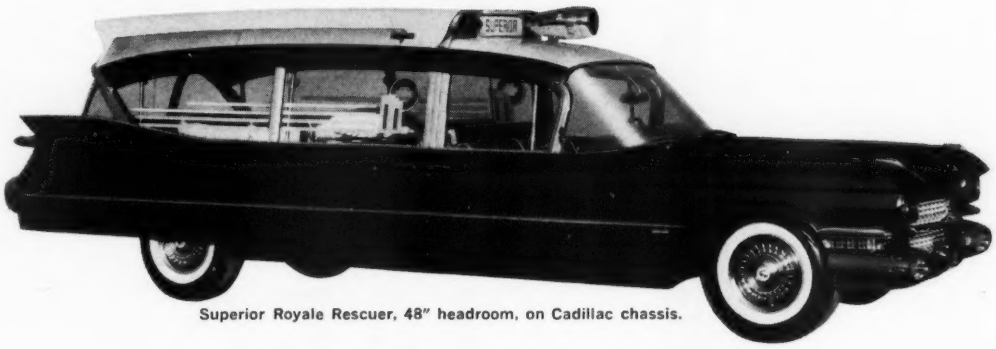

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The Bi-Lateral Fire Hose Company says:

"Every Fire Chief should be a member of IAFC"

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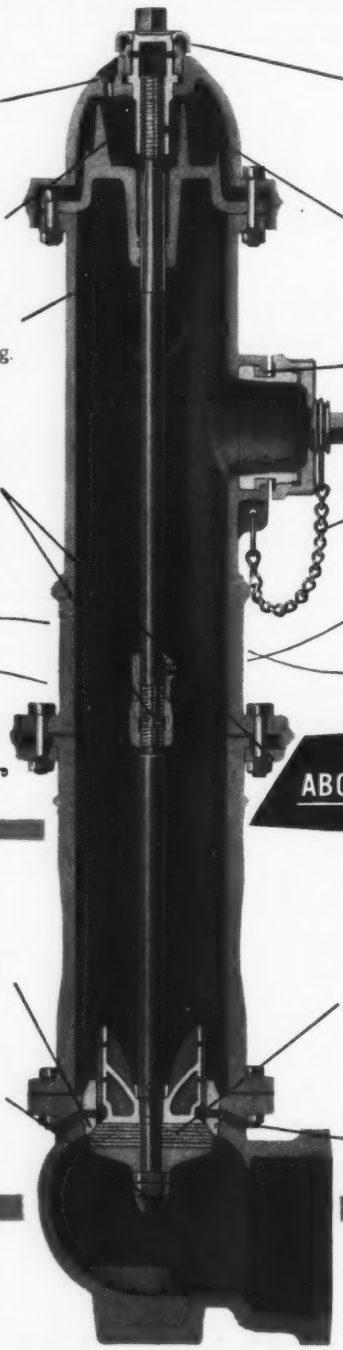
AWWA IMPROVED FIRE HYDRANTS

OIL FILLER PLUG
Check oil level quickly with dipstick and add oil if needed without removing bonnet.

OIL RESERVOIR
Positive, automatic lubrication of all stem threads and bearing surfaces each time hydrant is operated.

"O" RING SEALS
Permanent, water-tight seal without packing adjustments or stem binding.

SAFETY FLANGE AND SAFETY STEM COUPLING
Prevent damage and permit convenient facing of nozzles, addition of extension sections or changing of upper barrel for different nozzle arrangements quickly, easily, inexpensively . . . all without digging or water shut-off.



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Prevents freezing of operating nut and discourages tampering.

DRY TOP DESIGN
Operating threads and bearing surfaces sealed from water.

BREECH-LOCKED NOZZLES
Interlocking lugs and calking prevent blow-out. Easily removed if necessary.

NON-KINKING CHAINS
Each chain individually attached directly under nozzle.

. . . designed for

ABOVE-GROUND MAINTENANCE!

BRONZE SEAT RING
Straight threads and copper asbestos gasket permit easy removal of seat ring.

BRONZE CAP NUT
Locks and seals stem threads to prevent corrosion.

COMPRESSION-TYPE MAIN VALVE
Closes with water pressure...stays closed without strain ..permits repairs or changes without water shut-off.

DOUBLE DRAIN OPENINGS
Automatically force-flushed each time hydrant is operated.

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Champions

from the SOUTH* to the NORTH POLE**

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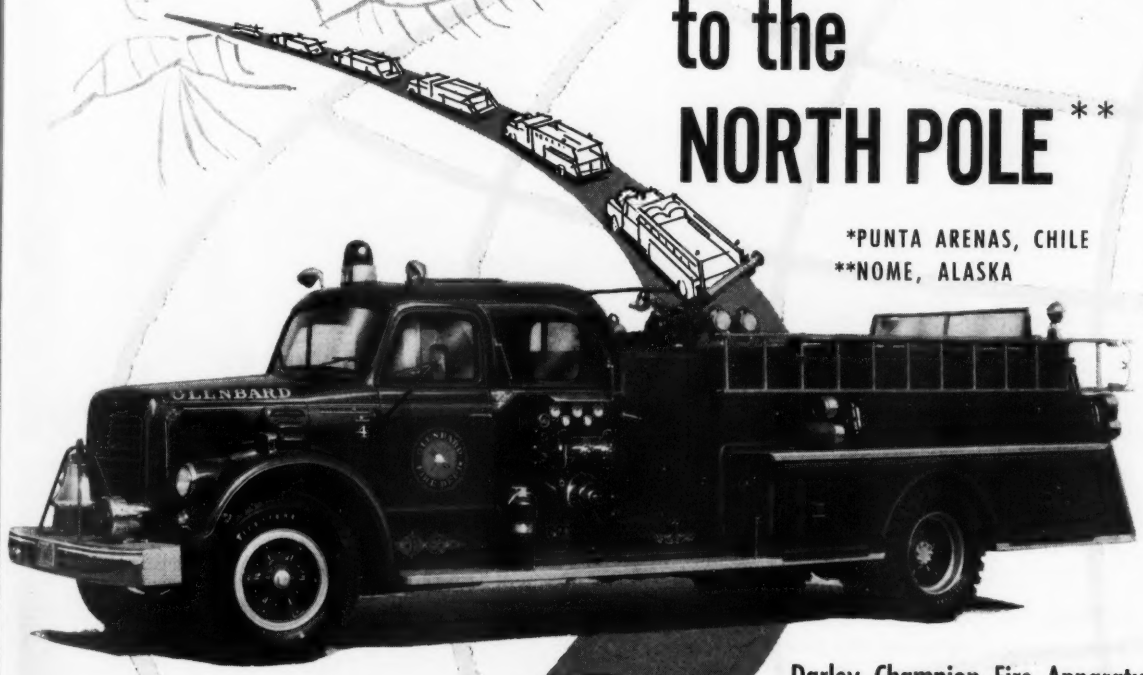
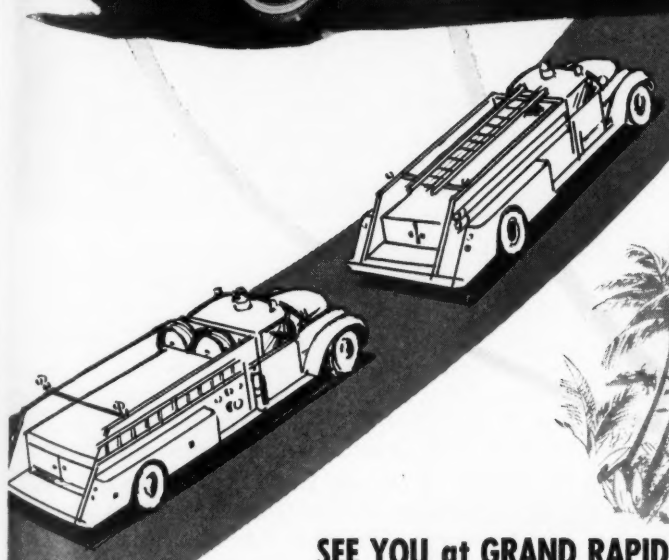


Darley Champion Fire Apparatus is job engineered to your local requirements.



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Two ways of providing
EXPOSURE PROTECTION

TOO LATE ▲

to prevent serious heat exposure, a valiant attempt is made by firefighters to prevent rupture of tankage, not already involved in flames, with relatively ineffective hose streams.

GRINNELL WATER SPRAY SYSTEM ▶

shown under test at the Marietta, Ohio plant of the Bakelite Union Carbide Plastic Company, a division of the Union Carbide Corporation. Water – when it is applied in time and distributed over the surfaces efficiently by a properly engineered system–is most effective in limiting tank fires and controlling their spread.

Proper safeguards are uppermost in importance in protecting tanks which contain gases and flammable liquids in the event of fire. For example, tanks must be guarded against extreme heat exposure. Leaking gas, if it should develop, must be diluted to the point where it will not burn. And fire, if it should occur, must be localized and controlled or extinguished.

With a Grinnell Water Spray System, you get protection against all these eventualities.

Before heat raises tank temperatures dangerously, an enveloping spray of water provides instant cooling, reducing internal pressure which helps prevent rupture. In addition, air turbulence is created (even in still air) which, in conjunction with the water vapor from the spray, helps dilute the flammable vapors controlling or extinguishing the fire. Flammable products which cannot be safely extinguished can be burned off under the protecting water spray with no damage to adjacent protected equipment.

There is a Grinnell Fire Protection System for every fire hazard. Call on Grinnell for advice about the one suited to your needs. Grinnell Company, Inc., 277 West Exchange Street, Providence 1, R. I.

GRINNELL FIRE PROTECTION SYSTEMS SINCE 1870

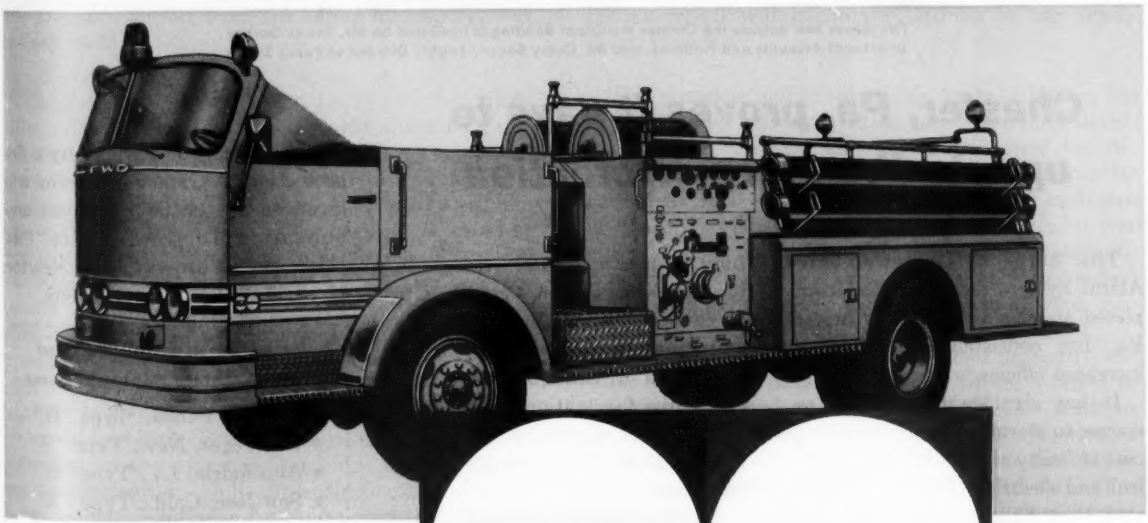
NEW FWD GOLDEN FIRE LINE . . .

FWD is celebrating its "50 years of vehicle ideas" with a completely new fire apparatus line—the Golden Fire Line. Completely new engineering and the finest new styling. It's an "idea" line . . . the best protection any community can have!

New rear drive models bring famous FWD protection to any department, regardless of budget. FWD's proven *four* wheel drive control is also available for those who want the finest in safety and guaranteed "get-there" traction. New junior aerials are now available on all FWD pumper chassis—in addition to FWD-Geesink aerials. New cab-forward styling is the most modern in the industry. In all, the FWD Golden Fire Line has 34 pumpers—500, 750, 1000 and 1250 G.P.M. —and 16 aerials. Write for "specs" now!

50 years of vehicle ideas FWD

Builders of America's finest and safest fire apparatus.



FWD CORPORATION

CLINTONVILLE, WISCONSIN

CANADIAN FACTORY • KITCHENER, ONTARIO

Fire Alarm box outside the Chester Municipal Building is inspected by Mr. James Gorbey, Director of Accounts and Finances, and Mr. Garry Boden, (right) Director of Public Safety.

Chester, Pa. proves it pays to update fire alarm protection

The $112,000 Gamewell Fire Alarm System modernization completed about a year ago in Chester, Pa., has consistently paid off in increased efficiency and economy.

It has significantly speeded response to alarms and eliminated the cost of faulty alarms due to mechanical and electrical failures. In addition, there have been far fewer service and maintenance calls. Mr. Garry Boden, Chester's Director of Public Safety sums it up this way: "Considering similar equipment available, it is my opinion that Gamewell equipment is the best that money can buy."

The new system is Type B and fully automatic. Its 169 strategically located boxes are on eight circuits, all connected through a central control point in police headquarters. Police and fire headquarters and the city's five fire stations have alarm gongs and tape recorders to indicate box locations. Diaphone horns alert volunteers.

Advance design features assure positive operation. For example, even if outside wiring is put out of action as a result of a hurricane, etc., "pull" boxes will still transmit a coded signal to Fire Alarm headquarters. Mr. Boden feels that his city has one of the most modern fire alarm systems in the nation. Are you as certain of your community's fire protection? A Gamewell Survey will give you all the facts without any obligation to you! Write THE GAMEWELL COMPANY, 1C, Newton Upper Falls 64, Massachusetts.

Recent New Installations of Gamewell Fire Alarm Systems

- Chester, Penna., Type "B"
- Las Vegas, Nev., Type "B"
- Alexandria, La., Type "B"
- San Jose, Calif., Type "A"
- Tulsa, Okla., Type "A"
- Yonkers, N. Y., Type "A" *(decentralized)*

Gamewell

FIRST... WHEN SECONDS COUNT

VOL. 112, NO. 8

FIRE ENGINEERING

THE JOURNAL OF THE FIRE PROTECTION PROFESSION SINCE 1877

AUGUST, 1959

Thoughts for the Future

In recent months several authorities in the fire service have predicted future developments in this great country and the resulting impact on fire fighting. Speaking before the 31st Fire Department Instructors Conference in Memphis, Loren Bush, chief engineer, Board of Underwriters of the Pacific, estimated the future fire potential of this country. Mr. Bush based his conclusions on the premise that people cause fires and the population increase forecasts indicate that by the year 2000, from 275 to 360 million people will live in these United States. He estimated that if fire losses increase in the same geometric proportion to the increase in population, as they have in the past 25 years, our national wealth and natural resources may be exhausted. This is an ominous warning!

Roi B. Woolley, former editor of FIRE ENGINEERING, addressing the recent Oregon State Fire Chiefs Association conference, expressed similar thoughts and stated that if the present trends continue, more than 120,000 people will lose their lives by fire in the next 10 years. Most of these will be the very young and the very old. In addition, over $13 billion in property will be destroyed!

This is not a pretty picture to behold but when dollar values of real property are judged against present inflationary trends some confidence does return. It can be expected, however wasteful and needless our present monetary fire losses, that future production methods and speed will be geared to an ever-increasing pace of living and replacement will be accomplished then as now without unduly straining the economy. This conclusion is based upon more optimistic predictions that our country will continue to expand and grow in all directions rather than in a few fields.

Losses to natural resources may be another story. For example, forest fires and the resulting damage to watershed areas may create hardships which exist for decades thereafter. Only time and sound conservation policies will eventually remove the scars or reduce the impact.

Fire fighting has always been considered a defensive science. As we progress into the future, it is possible this strategy may be shifted to a more offensive basis. Tactics now employed in the nature of fire prevention and building codes, inspections as well as laws and ordinances and education of the public will be improved and strengthened. It may come to pass that one of these will prove to be the key to our future methods of fire attack. As in the past, new discoveries breed new hazards and the fire service will continue to develop proper techniques to cope with them.

Where death by fire is concerned, our records are stained with the blood of countless victims. The toll of life during the past year may be readily depicted in cold statistics but figures will fail to place this story in its true perspective. The entire nation was aroused early last winter when 93 persons lost their lives in a school fire. A flurry of action to safeguard the children followed in all parts of the country. However it may have passed unnoticed that the same or a slightly greater number died in home fires during the Christmas holiday season. No concerted action followed these occurrences. In nearly every case these fatal fires could have been prevented if only simple home fire safety precautions had been observed. News reports since then continue to recount innumerable fatalities which will eventually add up to our yearly death statistics.

This senseless and irreplaceable waste of human life is the one loss which no nation can long afford. Buildings can be replaced and substitutes found for depleted natural resources, but human life cannot be reclaimed once lost. History is replete with examples of nations which have withstood the ravages of war and pestilence and emerged with even greater strength from their trials. These same nations later succumbed when brilliant leaders passed away and were succeeded by mediocre men.

Who can estimate the cost of human ingenuity and skills which the past, present and future victims of fire may have had at their command? This leads us to the conclusion that every effort must be exerted now to stem the terrible toll of senseless fire deaths before we discover that we cannot afford them. For when such a discovery is made, it may then be too late for action!

Hlow O'Brien

Spectacular rescue operation at recent elevated train collision received world-wide press notice. Over 60 persons were removed from train by this unit and transported safely to ground, 50 feet below

Chicago Proves Value of Aerial Platforms for Fire Fighting

"Quinn's Snorkel" stimulates new interest in the hydraulic tower as a substitute for older water tower

By NEAL CALLAHAN *Chicago Fire Department* **and HAL BRUNO** *The Chicago American*

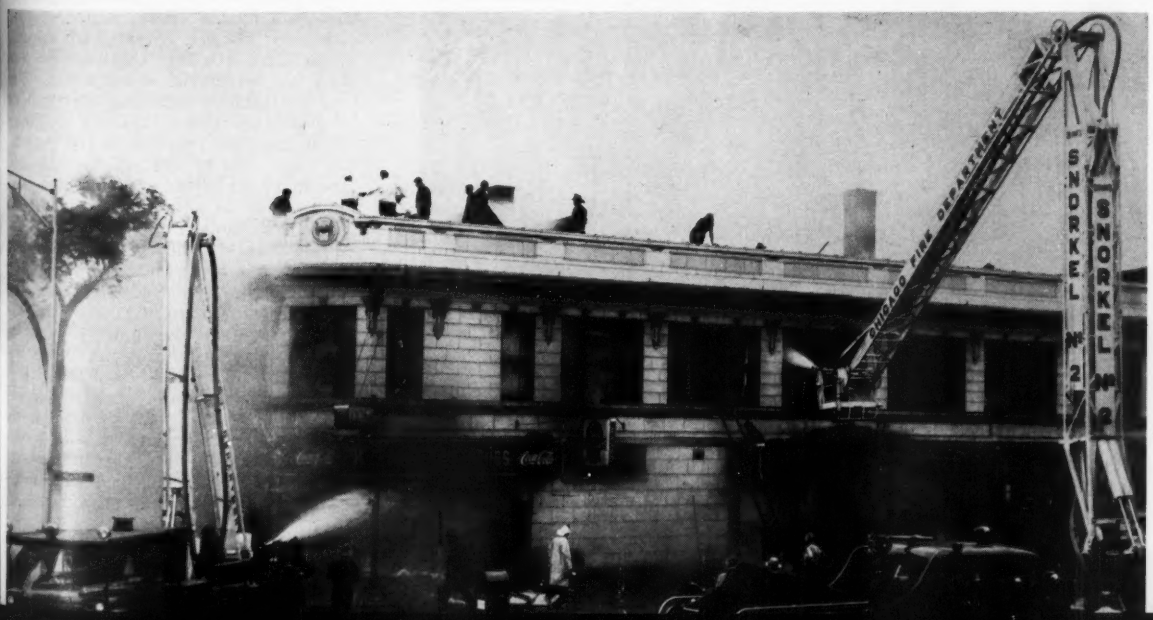
THE CHICAGO FIRE DEPARTMENT recently added three new types of water and rescue towers which Fire Commissioner Robert J. Quinn believes "will revolutionize fire fighting and rescue methods." Nicknamed "Quinn's Snorkels" by Chicago newsmen, these towers have been responding to fires since October 1958 and have repeatedly proven themselves one of the most spectacular fire fighting machines since the invention of the pumper itself. What began as a trial experiment last fall, has developed into what may well be one of the significant fire fighting advances in more than 20 years.

Since his appointment as fire commissioner early in 1957, Quinn has tried to improve the conventional water tower. A fireman for over 30 years, he believes the water tower to be a valuable piece of equipment. However, he feels that its effectiveness to reach the base of a fire is limited due to restricted maneuverability.

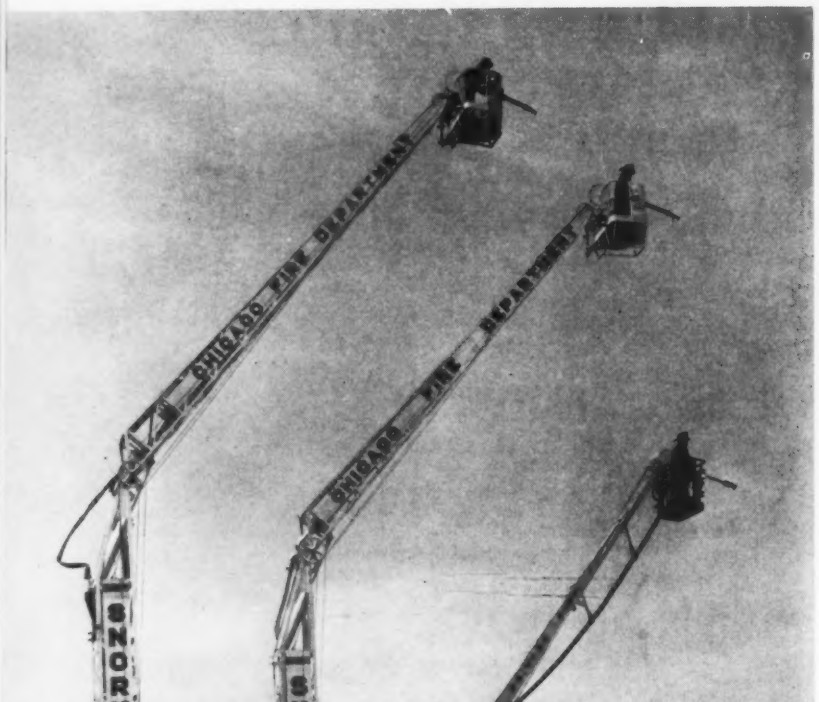
Last September, the commissioner and his administrative assistant, Bill Quinn (no relation), noted workmen using a 50-foot aerial platform while cleaning a large sign over a busy downtown sidewalk. They stopped and watched the hydraulically operated boom swing the basket around the sign with the greatest of ease. Both remarked that perhaps such a unit might be the answer to the water tower problem.

Quinn asked his chief automotive engineer, Edward Prendergast, to contact the manufacturing company and inquire whether or not they would be interested in testing a machine as a fire fighting apparatus. The company agreed and sent a 50-foot hydraulic boom to the fire de-

Versatility of units is shown during action at 3-11 office building fire. Snorkel No. 1 is operating on burning ceiling of first floor, while No. 2 takes care of fire on second floor of two-story structure *—All photos courtesy Chicago F. D.*



"Snorkel" combines best features of aerial ladder, water tower and elevator. Shows promise for small as well as large departments



Chicago's three Snorkels during drill session in Grand Park. The 50-foot No. 1 (right) uses 3½-inch boat hose to supply nozzle. No. 2, 75-foot, and No. 3, 65-foot, use boat hose to supply pipe connected to turret

Wire mesh stretcher may be hooked to operating basket and raised or lowered with victim strapped in position. Scene is during rescue training class

partment shops where Division Marshal Eugene Brennan, uniformed officer in charge, installed fire fighting equipment.

Mounted on a GMC Model 354 chassis and built by the Pitman Manufacturing Company, the first Snorkel cost the fire department $14,000, considerably less than a conventional water tower. The unit is capable of delivering 1,200 gallons of water per minute through a 2-inch tip at a maximum pressure of 100 pounds. On each side of the rig hydraulically operated jacks extend to steady the apparatus while in operation. In addition, these jacks add to the maneuverability of the Snorkel. They can be raised or lowered in a few seconds to permit the apparatus to be moved around a fire building without any difficulty.

The apparatus is equipped with a manually operated turret gun and a 50-foot length of 3½-inch "boat hose." Engine companies leading into a Snorkel siamese their lines into the boat hose. On the newer units, No. 2 and 3, the hose in turn leads to a pipe running up the jointed tower. This gives the units greater maneuverability, allowing them

Traveling position of the Snorkels. Note flexible pipe connection at hinged joint of No. 3 boom. Boat hose is used on No. 2 boom for flexible connection between turret supply pipes

to be moved an additional 100 feet if necessary without disconnecting.

Placing the equipment on the original rig didn't make it a fire truck. It was subjected to many tests to be sure it was capable of performing the work it would be required to do at an actual fire. One of the first problems which had to be overcome was the critical weight limitation of the basket. After a number of tests, it was determined that the basket could carry three persons without difficulty. Back pressure on the nozzle was checked to insure the safety of the fireman riding in the basket. All tests were conducted under the watchful eyes of Commissioner Quinn, Bill Quinn, Second Deputy Fire Marshals Frank Thielmann, Harry Mohr and William O'Brien.

During the tests, the Snorkel was weighted to a point which simulated the icing problems the boom might encounter during the colder months. To insure maximum safety during the test period and the unit's first weeks of operation, the Pitman Company assigned two engineers to work with the fire department and assist in ironing out any bugs that might be found.

Radio equipped

Because communications to a point some 50 feet above ground level was difficult, the fire department shops installed a two-way radio system between the ground and basket. This enables personnel to pass instructions and the fireman in the basket to inform the chief on the ground of conditions he can view from his perch high above the street. After weeks of experimenting, the apparatus went into service in mid-October in downtown Chicago to respond to all fires of the 2-11 or more caliber.

At 1:00 a.m., October 18, a 4-11 alarm fire was sounded for a large lumber yard at 1731 Cermak Road, on the southwest side of the city. The fire started in a shed located in the middle of the yard and quickly spread to a number of stacks of lumber nearby. Due to the great area involved, and because the large stacks of lumber were practically next to each other, firemen were forced to fight the

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Details of hydraulic jacks employed on Snorkel No. 2. All four "outriggers" are operated by a single control. Auxiliary engine is located directly above rear wheels. Note four-way siamese on boat hose

Chicago fire fighters practice use of power hammer from Snorkel basket during drill session. Technique has been applied during actual fire to permit operations in windowless building

Split-Second Fire Protection

Previous articles in FIRE ENGINEERING have discussed the subject of rocket fuels and the attendant hazards. Liquid propellants were described in the August and September 1958 issues, and the looming challenge of the missile age was reported in the April 1959 issue. Another aspect of the problem—the solid-type propellant—is considered in this article, together with a practical approach which has been used successfully.

WITHIN RECENT MONTHS, a new word has been coined for a challenge which has stirred man's imagination for centuries. The birth of "Astronautics" symbolizes our position at the threshold of the conquest of space. The first Astronauts, pioneers of the universe, have been selected and are scheduled to be launched into space within two years.

In the April 1959 issue of FIRE ENGINEERING, Lester Eggleston chronicles the development of the missle age and the challenge that the fire protection field must meet. This article discusses one practical approach to the problem which has been used successfully at the U. S. Naval Propellant Plant, Indian Head, Md. This plant is doing research and development on propellant fuels, and is manufacturing solid propellants and rocket motors for many operational missiles.

By CARROL E. BURTNER

The author graduated from the Worcester Polytechnic Institute in 1947 with a degree in civil engineering, and is a chartered property and casualty underwriter. He is the first vice president of the Chesapeake Chapter, Society of Fire Protection Engineers. His experience includes service with the Factory Insurance Association, and until recently he was district fire protection engineer for the Potomac River Naval Command. He is presently head of the Standards and Priorities Section, Fire Protection Branch, Bureau of Yards and Docks, Department of the Navy.

Nature of solid propellants

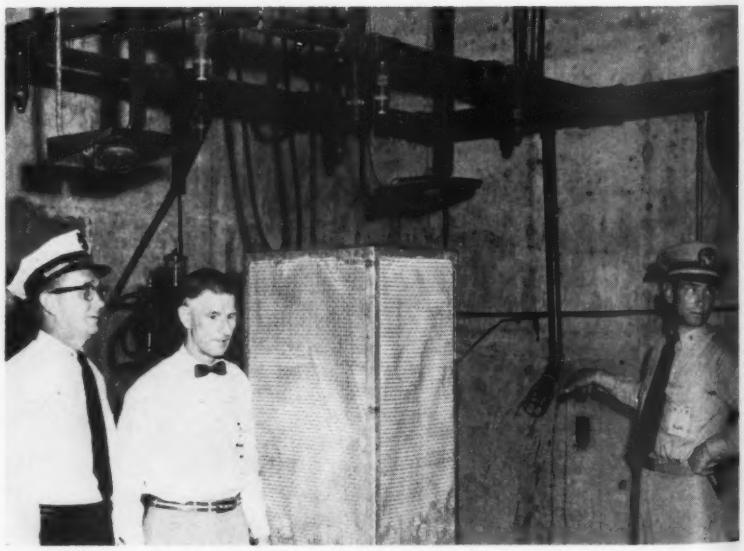
A comparison with liquid propellants illustrates the basic nature of solid propellants. Liquid propellants are of two main types. One, a liquid *monopropellant,* is a single liquid with its own oxidizing component which is capable of sustained autodecomposition upon injection into a rocket power plant because of a catalyst or high temperature within the plant. The other, a liquid *bipropellant,* has two distinctive components, the fuel and the oxidizer, which are stored separately and injected separately into the rocket power plant. A *hypergolic* bipropellant system is one in which the fuel and oxidizer ignite spontaneously upon combination. Solid propellants, on the other hand, are solid combinations of a fuel and oxidizer which are capable of sustained combustion once initiated. The fuel-oxidizer combinations may be either *homogeneous* or *heterogeneous,* depending on the nature of the composition. Of the two general types presently used, the *double-base* type is homogeneous, while the *composite* type is heterogeneous.

Solid propellants generally have lower energy yields than liquid propellants. Although their firing is not controllable like that of liquid propellants, which can be stopped, resumed, or modulated, solid propellants present advantages in lower cost and simpler design requirements. Their ease of storage and handling, and relatively simple firing procedures, assure optimum readiness for use, and explain their selection for use on board ships or submarines.

Solid propellants are the oldest form of rocket fuel. Black powder, which has been used for hundreds of years, is the forerunner of today's more sophisticated propellants. Black powder, then as now, is a composite type, with oxidizer of potassium nitrate and fuel of charcoal and sulfur. The sulfur also serves as a binder for the mix.

When smokeless powder was developed, it first was as a single base with nitrocellulose as the basic explosive, and then successively as double base and triple base as other explosive material was added. The early basic propellants joined the fuel and oxidizer chemically by nitration, as do the homogeneous double-base types of today, such as that with cellulose nitrate and nitroglycerine composition, among others.

Modern composite types use oxidizers such as ammonium perchlorate, ammonium nitrate, or others, in combination with fuels such as powdered metals, or plastics or synthetic rubbers of various sorts which also serve as the binder for



Lieutenant Commander H. Buckles, right, safety officer of the Naval Propellant Plant, points out a discharge nozzle on a high-speed, preprimed deluge system. Fire Chief George C. McGuigan and B. C. Mann, safety engineer, look on. Note the plugs in the tips of the nozzles, which allow the system piping to be primed with water in order to meet the very fast operating requirements. The lower nozzle has a guard to prevent accidental jarring of the plug

—Official photograph Naval Propellant Plant

the heterogeneous mix. A typical composite propellant might contain 75 per cent ammonium perchlorate oxidizer, 20 per cent polymer binder and fuel, and 5 per cent of other materials such as plasticizers, deterioration stabilizers, and burning modifiers.

Hazards of solid propellants

The increasing hazard potential of solid propellants may be better understood by a short discussion of the differences between the terms "explosion," "detonation," and "deflagration," as defined by the National Board of Fire Underwriters. An explosion may be described briefly as sudden release of a large amount of energy at a rate sufficient to exert enormous pressures on the surroundings, but relatively slow compared to a detonation. An explosion has velocities ranging to upwards of 1,500 feet per second and develops pressures up to 50,000 pounds per square inch.

A detonation is a violent, practically instantaneous release of chemical energy accompanied by a severe shock wave and characterized by extensive shattering and cratering. Velocities of a detonation range from less than 2,000 feet per second to over 25,000 feet per second, and pressures range from 50,000 to 4,000,000 pounds per square inch.

A deflagration is an extremely rapid and destructive burning action. Low explosives function by deflagration. Many materials capable of explosion may not be subject to detonation, but in some cases, a deflagration under confinement can change to a detonation.

The earlier propellants, black and smokeless powder, are considered low explosives which operate by "pushing" and cannot shift from a deflagration to a detonation. Many modern solid propellants, however, are capable of undergoing a transition from deflagration to detonation by confinement. The heating values, combustion temperatures, and burning rates are increasing as new propellant compositions are developed. Also, larger sizes and more complex configurations of propellant units are adding to their destructive capacity.

The manufacturing processes present a number of hazards. Included are the grinding of oxidizers and other components, mixing of ingredients, extrusion or casting to grain size, cutting, machining, curing, and others. All of these operations, with the possible exception of curing, warrant consideration for installed fire protection since they involve exposure of the propellant material to ignition

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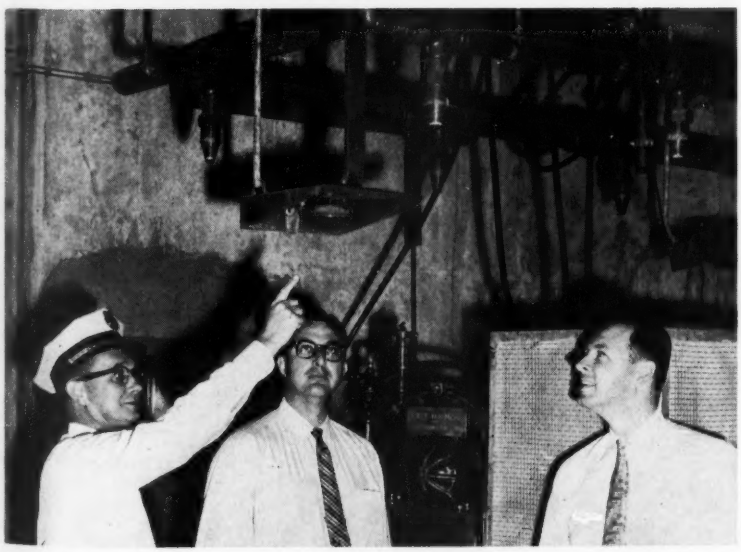
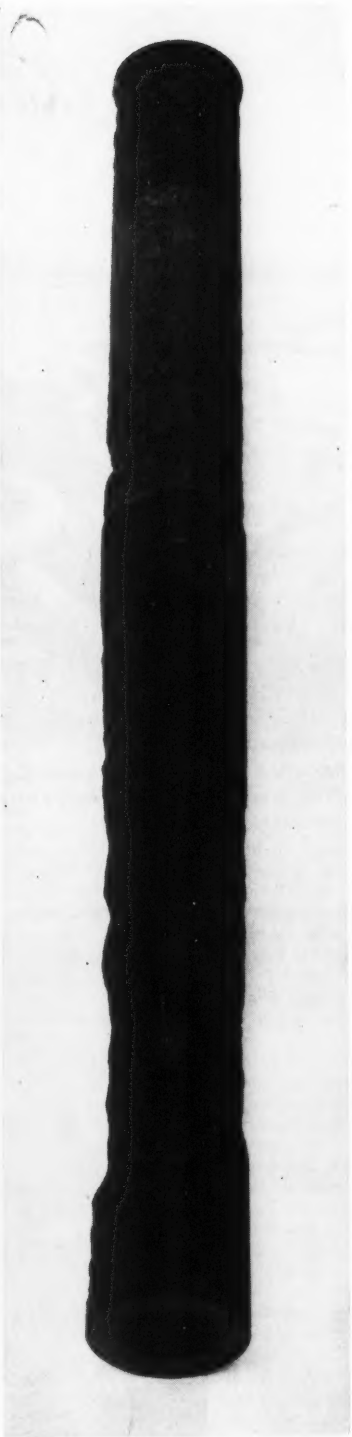
for Solid Propellants

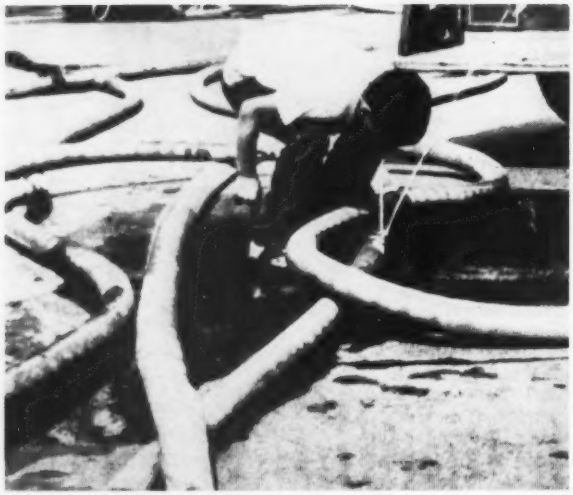


Fire Chief George C. McGuigan of the Naval Propellant Plant, left, points at the heat responsive device described by the author, right, while Edward F. Tamas, center, district fire protection engineer, looks on. Note the metal heat baffle above the device which aids in achieving the high-speed operation. The process protected is a propellant strand cutter—*Official photograph Naval Propellant Plant*



Photograph of solid propellant grain which ignited during processing and was completely extinguished by operation of a high-speed deluge system. Developments in the manufacture of propellant material make it increasingly difficult to achieve such extinguishment. Confinement and explosion/detonation suppression are the next desirable goals
—*Official photograph U. S. Navy*

An analysis of data supplied by representative fire departments serving communities of less than 10,000 population



What Small-Town Fire Chiefs Think of Fire Hose

Regardless of the size of a community, boys will discover additional benefits from a hose line. Leaking coupling provides refreshment for this junior buff

Spaghetti—rural style. Volunteer mutual aid forces battle blaze following explosion in feed and grain store

Ketchikan, Alaska, volunteers take the hose line with them as they run for their lives. Action occurred as theatre wall toppled during one of the city's worst fires

A SPECIAL STAFF REPORT*

THE DATA reported here are a supplement to the original material presented in the August 1958 issue of FIRE ENGINEERING. They supply information which has heretofore been lacking and is intended to give an indication of how the small community fire chief thinks in terms of that single most important item of a fire department—fire hose.

Responses to the questionnaires were forthcoming from more than 300 fire chiefs, principally volunteers located in communities of less than 10,000 population. A breakdown of the replies shows that 86 per cent of the fire departments involved were wholly manned by volunteers, 12 per cent consisted of paid personnel supplemented by volunteers, and 2 per cent were fully paid.

Geographical distribution of the returns was as follows:

Geographical Area	*% of returns*	*% of all U. S. F. D.'s***
New England	9	16
Middle Atlantic	20	32
East North Central ...	22	17
West North Central ..	12	6
South Atlantic	10	9
East South Central ..	4	2
West South Central ..	7	5
Mountain	7	3
Pacific	9	10

Hose in use

The average amount of 1½-inch hose carried on apparatus varies little between those departments serving communities between 5,000 and 10,000 population and those under 5,000 persons. Ninety-eight per cent above the 5,000 demarcation line carry an average total of 1,000 feet in active service. Ninety-four per cent of those below 5,000 carry 800 feet total on apparatus.

The results are somewhat different with 2½-inch hose. Ninety-nine per cent in the upper category employ an average total of 3,300 feet in active service, while ninety-six per cent of the below 5,000 group use a total average of 1,800 feet of the larger hose.

The use of 3-inch hose is very limited among smaller departments. Eleven per cent of those above 5,000 carry an average of 100 feet while of those in the lower category, only four per cent employ an average of 200 feet.

Hose reserves are not plentiful in either grouping, and in the less than 5,000 group are nonexistent in the majority of cases.

Stand-by supplies of 1½-inch hose are maintained by 61 per cent of the departments serving communities between 5,000 and 10,000, with an average of 500 feet in stock. Only 45 per cent of those below 5,000 maintain reserves which average 500 feet.

Reserves of 2½-inch hose total an average of 800 feet in each category, with 69 per cent of the 5,000 to 10,000 group responding in the affirmative, while only 48 per cent of those in the smaller group stated they kept a reserve supply on hand.

Three-inch hose reserves are practically nonexistent, with only one per cent in the less than 5,000 group stating that an average of 100 feet was available in case of need.

Based on the information developed in this survey, it is estimated that the fire departments of all communities below 10,000 population stock approximately 60 million feet of hose in all sizes. Eighty-three per cent of the departments reporting specify hose treated to resist mildew. From information published last year, it appears that about 88 million feet of hose is maintained by fire departments in all categories. It is estimated that the departments covered in this report purchase between 5 and 6 million feet annually; the grand total each year thus approximating 10 million feet.

Purchase of hose to maintain active and reserve stocks is made in small quantities. Eighty-eight per cent of departments in the 5,000 to 10,000 group buy an average of 400 feet of 1½-inch hose at one time; the below-5,000 group buys an average of 300 feet in a lot. Ninety

* Special acknowledgement is made of the technical assistance of the Market Research Section, Textile Fibers Department, E. I. du Pont de Nemours & Co. in analyzing this data.

** Based upon an estimated total of 21,150 municipal fire departments in the United States.

per cent in the larger population group buys an average of 600 feet of 2½-inch hose, while 81 per cent of the lesser group buys 400 feet at an order. Underwriters specifications are employed by 61 per cent of the departments when purchasing hose, while 34 per cent use their own "specs." Five per cent did not answer the question.

Important considerations

The respondents were asked to check the three most important items which they considered when purchasing hose. The following table indicates the consensus of this opinion:

Longer life	51%
Compactness	47%
Resistance to chemicals	47%
Durability	46%
Resistance to mildew	41%
Lighter weight	33%
Easier handling	32%
Low initial cost	9%
Strength (higher test)	7%
Other	1%

Synthetics gain strength

The increasing popularity of man-made fibers incorporated in hose construction is evident from the following:

Departments using cotton-jacketed rubber-lined hose exclusively	19%
Departments using Dacron*** and cotton exclusively	11%
Departments using nylon and cotton exclusively	3%
Departments using both cotton and Dacron and cotton	54%
Departments using both cotton and nylon and cotton	5%
Departments using Dacron and cotton and nylon and cotton	2%
Departments using all three	6%

The trend is further borne out by answers to the question concerning fiber preference. Dacron and cotton was preferred by 74 per cent of the respondents and nylon by 13 per cent. Only 10 per cent stated they still preferred all-cotton hose jackets. Three per cent of the returns failed to mention any preference.

Additional evidence of the trend is shown in the following:

1. **Departments using cotton exclusively**
   41 per cent prefer cotton
   44 per cent prefer Dacron and cotton
   10 per cent prefer nylon and cotton
   5 per cent no answer

2. **Departments using Dacron and cotton exclusively**
   94 per cent prefer Dacron and cotton
   3 per cent prefer nylon and cotton
   3 per cent no answer

*** Du Pont's registered trademark for its polyester fiber.

Frequency of Hose Change

Schedule	Total	5,000 to 10,000	Under 5,000
Monthly	9%	9%	9%
2 to 3 months	14%	18%	12%
4 to 5 months	5%	5%	5%
6 months	31%	43%	26%
10 to 12 months	6%	3%	8%
More than once per year	4%	3%	4%
After each use	10%	10%	10%
No answer	21%	9%	26%

Reported Difficulties with Hose

Items	All-Cotton	Dacron-cotton
Cuts—tears	2%	2%
Coupling retention	Less than 1%	—
Abrasion and scuffing	5%	2%
Kinking	1%	—
Rubber deterioration	2%	—
Chemical action	—	less than 1%
Handling difficulty—stiffness	10%	less than 1%
Heavy weight	8%	—
Mildew and rot	8%	less than 1%
Bursts—excessive pressure	4%	2%

3. **Departments using more than one type of hose**
   4 per cent preferred all-cotton
   82 per cent preferred Dacron and cotton
   14 per cent preferred nylon and cotton

Service life

The over-all average service life of 1½-inch hose is reported to be 10 years; 2½-inch, 11 years and 3-inch, 6 years.

Hose records are maintained by 47 per cent of the departments, while 48 per cent keep no account; 5 per cent did not answer the question. This is quite a contrast to the 84 per cent of the communities above 10,000 which reported previously that records were maintained.

When hose is disposed of, it is junked by 51 per cent of the departments and given to other departments by 40 per cent. Nine per cent did not answer the question. Twenty-two per cent of those queried stated hose was replaced automatically on a scheduled basis.

In this regard, 75 per cent stated the intention of buying Dacron and cotton hose in the future; 9 per cent intend to buy all-cotton; 8 per cent will buy other fibers and 8 per cent failed to answer the question.

Hose care

Seventy-six per cent of the respondents cleaned all hose after each use. Nineteen per cent did not and 5 per cent did not answer.

After washing, hose is dried on racks in 50 per cent of the departments; 16 per cent use hose towers; and 10 per cent employ hose dryers. Combinations of two of the three methods mentioned are employed equally by an additional 3 per cent, while 13 per cent employ other unstated methods. Eight per cent did not answer the question. The method of drying was not influenced in any manner by the type of hose fibers employed.

In addition, hose was changed on each vehicle as shown in the above table.

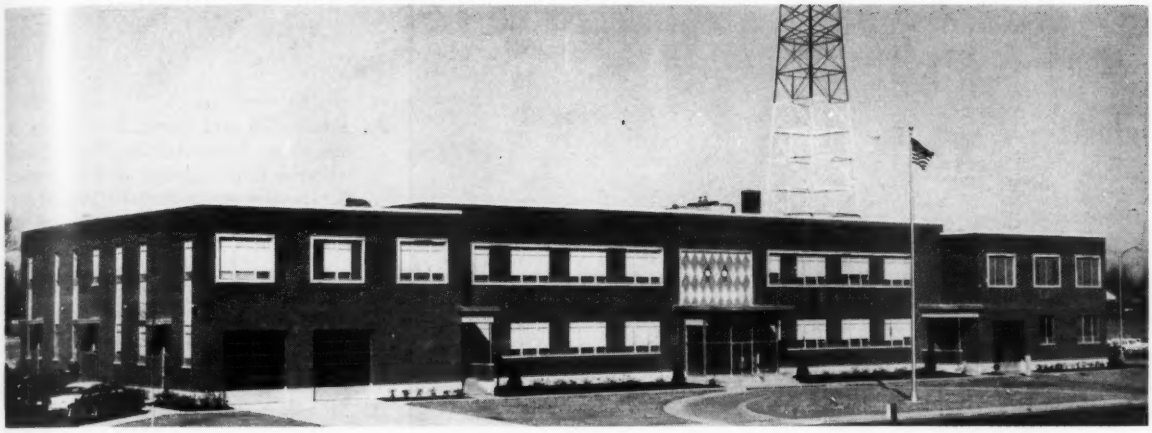
Hose problems

Replies to questions concerning problems with hose indicate that 22 per cent of departments using all-cotton hose had serious problems with it. In contrast, only 6 per cent of the departments maintaining Dacron and cotton hose reported serious difficulties. The problems and frequency are given in the table above.*

Suggested hose improvements were offered by half of the respondents with the greatest stress, 27 per cent, placed on improving couplings to make them better, lighter and stronger. Lightweight hose was offered by 10 per cent; better resistance to rot and mildew, 10 per cent; more durable, longer life and more abrasion resistance were stated by 9 per cent. A standard hose code and a color code were recommended by 8 per cent.

When asked if new hose employing synthetic fibers in the jacket construction will become more popular in the future, a solid 90 per cent answered in the affirmative. Only 3 per cent felt it would become less popular, while 7 per cent gave no answer. Certainly this is an overwhelming vote of confidence for hose using Dacron or nylon fibers in the jacket construction. □□

* Some respondents checked more than one problem.



Main building of training center named to honor Claude T. Armour, vice mayor and commissioner of fire and police

New Training Center in Memphis

A SPECIAL ATTRACTION at the most recent Memphis Fire Department Instructors Conference was the dedication on Sunday, February 22nd, of the Claude A. Armour Fire and Police Training Academy and Communications Center. A large number of conference registrants later accepted Chief John C. Klinck's invitation to inspect the building and were tremendously impressed with the new $2½-million facility designed by Architect Richard J. Regan.

The center is located on the northwest corner of Flicker and Avery, in the approximate geographic center of the city.

Total land area is 18 acres and about four acres have been paved and landscaped. An additional eight acres are now being paved, and the remainder will be completed in 1960.

The plant consists of a main building housing the fire and police communications and alarm systems, fire and police training divisions, and the fire prevention bureau. Both fire and police radio transmitters and repair shops are located here.

The main building is approximately 250 feet long and 90 to 100 feet wide. It is of reinforced concrete frame and concrete block panel walls, brick-faced. Floors are reinforced concrete, surfaced with asphalt tile and terrazzo. Approximately 60 per cent of the roof area is concrete, the remainder being corrugated steel deck on bar joists. The roof is surfaced with tar and gravel over a vapor barrier. A basement boiler room houses heating, air conditioning, mechanical and electrical equipment, as well as an auxiliary gasoline-driven generator. The fire alarm office has a partial basement cable vault.

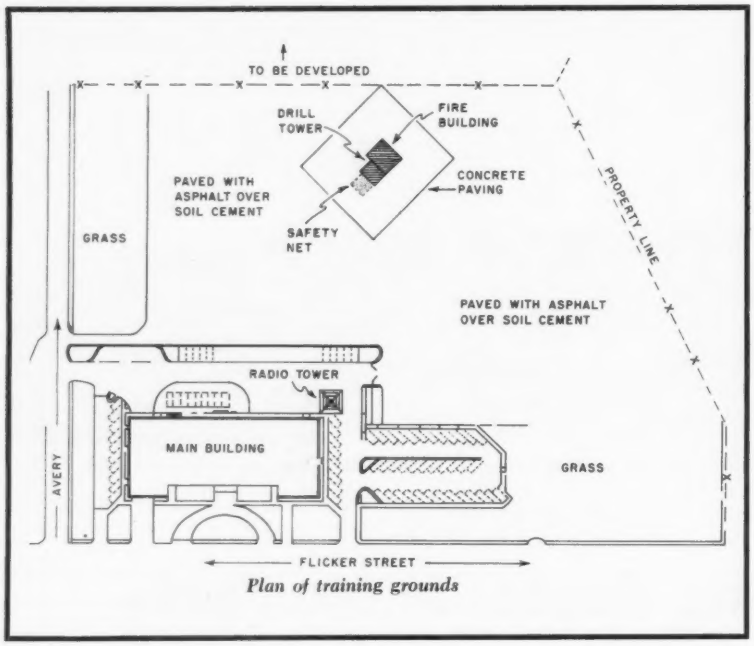
Fire alarm

Fire alarm facilities include a central alarm office, repair shop, battery room, administrative offices, map and drafting room and kitchen. The radio operator is housed in a separate soundproof room, and keeps in contact with alarm operators through an intercom system. Traffic light controls are also located here. District Chief J. A. Gennette is chief of communications.

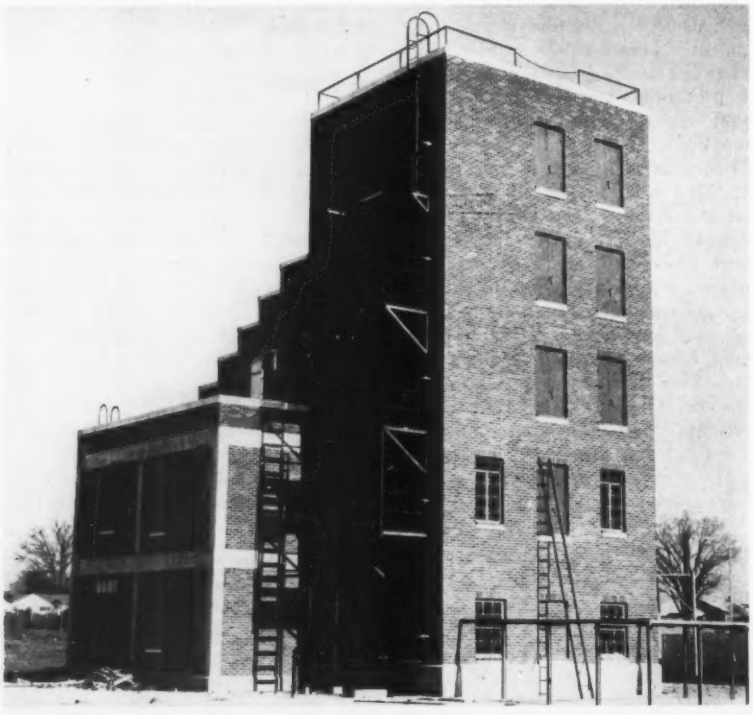
Fire prevention bureau

The bureau facilities consist of a general office, offices of the fire marshal, assistant fire marshal, Commercial and Industrial Fire Prevention

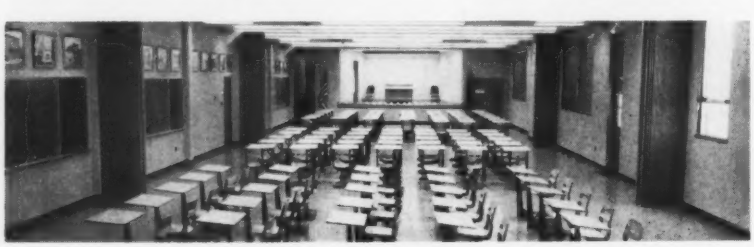
Fire prevention bureau general office in the imposing new plant. Deputy Chief E. P. Lovell heads bureau as fire marshal



Plan of training grounds



Drill tower and fire training building have specially constructed and insulated walls to resist heat of training fires



Classroom-auditorium, located on second floor of main building, is multipurpose room which can seat 700 persons or provide three large classrooms. It is equipped with stage, projection booth and built-in p-a system

Association and secretaries' offices. A sign shop is located in this bureau, where a large number of fire prevention posters and material is turned out. A conference room and record and file space is also provided.

Training division

The training division occupies two large classrooms on the ground floor, as well as a large area on the second floor.

The ground floor section consists of a pumper and sprinkler training area equipped with drafting pit, hydrants, sprinkler valves and a sprinkler demonstration cabinet. In addition, the American District Telegraph Company installed a large operating wall panel, which contains all the various fire detection, alarm and sprinkler supervisory equipment used in the city.

The rooms are large enough to permit operation of two pumpers at one time and exhaust ports in the floor permit apparatus to be run with all doors and windows closed.

Equipment in these rooms include cut-away hydrants; pumps; a hose trailer; two pumpers; a wet, dry and deluge sprinkler valve, and pumper testing gauges and equipment.

Training area

A five-story drill tower and a two-and-a-half-story fire fighting building have been completed. The tower is brick with reinforced concrete floors and roof. It has an enclosed stairway, inside and outside standpipes, and sprinklers on each floor. A built-in chimney, with specially designed dampers allows smoke to be channeled to any one or number of floors at the same time.

All window sills are covered with cypress plank bolted to the brickwork. All copings, sills and other precast stone parts are anchored with bolts or metal stays, in addition to mortar. Fire escape parts, steel ladders and metal rails are double-anchored direct-

ly into the brickwork, to prevent any chance of weakening.

On the roof of the tower, ring bolts are sunk into the concrete for tying lines, and a non-skid surface is provided as a safety measure.

The fire fighting building consists of a full basement, first and second floors, a 3-foot cockloft and attic with pitched roof above. The building is novel in its construction. It consists of a reinforced concrete frame with outer brick panel walls. Next to the outer walls is a ½-inch air space, then inner walls of fire brick. The ½-inch air space is vented to the outside by means of small louvers placed at the top and bottom of each panel. The entire inside of the fire building is covered with at least 1½ inches of calcium-aluminate cement, which is both heat-resistant and porous.

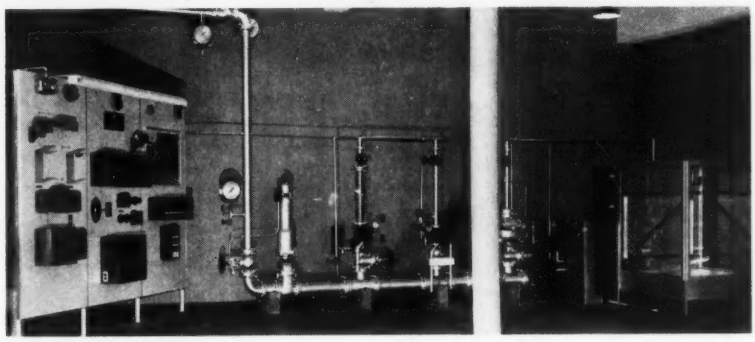
Movable partitions permit changes in the floor plan. These are constructed of angle iron frames, filled with 2 x 4 planks.

Thermocouples are installed in various parts of the building and are connected to a central panel, so that temperature readings can be made from one location. There is no interior lighting in the fire building, but 110-120-volt outlets are located at numerous places on the outside of the building, so that portable lighting equipment and power tools can be used inside.

The north side of the fire building and drill tower is provided with a full-size mock-up of overhead trolley lines, which is used in aerial ladder training. A safety net is also installed on the front of the tower.

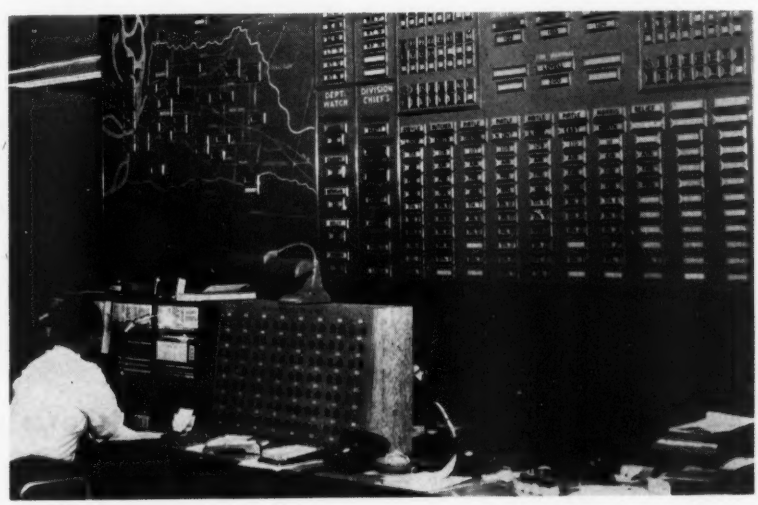
The third phase of construction of the center will include an equipment building (housing apparatus and a hose tower), a gymnasium, locker and shower rooms, gas mask training facilities, a 10,000-gallon outdoor drafting pit, gasoline storage area, rescue training area, flammable liquid, LP gas and transformer installations. Plans are now under study and construction is scheduled to start next year. □□

Training division, headed by District Chief C. L. Scott, maintains own equipment for offset printing of manuals, bulletins, etc.



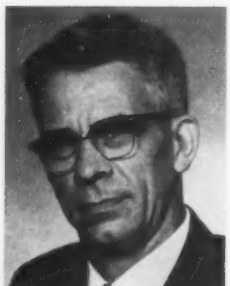
ADT panel and sprinkler demonstration section of training rooms. Glass-enclosed booth (right) permits observation of sprinkler head in action

Photo labs have special air conditioning and ventilating equipment to maintain uniform temperature and humidity. All water used is temperature regulated



Fire alarm control board and operator's position. Map spots company locations by individual lights. Board indicates apparatus and chief officer personnel in service. District Chief J. A. Gennette is chief of communications

About the Authors



Floyd W. (Bill) Nelson is chief instructor, firemanship training, Engineering Extension, Iowa State University. He is a former first assistant chief of the Atlantic, Iowa, Fire Department and joined the Iowa staff in 1951 as a field instructor. He is a member of the Exploratory Committee on the Application of Water and is active in the Fire Service Training Association

Keith Royer is supervisor, firemanship training, Engineering Extension, Iowa State University. A former member of the Wichita, Kans., Fire Department, he headed the University of Kansas statewide fire training program at its inception. He joined the Iowa State staff in 1951 and was named supervisor in 1956. He is a charter member of the Exploratory Committee on the Application of Water.

Firemen move in on test fire in old barn near Wilton Junction, Iowa. Using water flow formula described by the authors, it was determined in pre-fire planning that 288 gpm would be necessary for this fire. This provided ideal rate of flow *—Photos by Colby Studio*

Water for Fog Fire Fighting — *How much and how to apply it!*

By KEITH ROYER and FLOYD W. NELSON

The observations of fire extinguishment procedures reported here are based on a number of tests conducted by the authors and the Iowa firemanship training staff using fog streams. Much of the research work was stimulated by previous tests conducted by the Exploratory Committee on the Application of Water. The information gathered to date has resulted in even greater interest in the subject and further studies are to be carried on in the future.

TWO IMPORTANT QUESTIONS which seem uppermost in the minds of many firemen are: At a given fire how much water do we need and how should the water be used? Lacking even a suggested formula for determining flow rates for a specific fire, many fire officers have developed some method of their own for "guesstimating" the required flow. The big problem is that it is generally so vague that few officers can explain just how this is done. As a result there is no way to pass this information on to a new fireman who needs and wants this information. Hence he must wait until he has had enough actual experience to develop the means to answer this question to his own satisfaction.

After several years, and hundreds of

experiments, a rate-of-flow formula has evolved which seems to be a practical answer to the first question. This is based on the following data:

1. Study of expansion ratios of water to steam indicates that one gallon of water will produce, with a margin of safety, 200 cubic feet of steam

2. Study of heat production in relation to oxygen also indicates that in the conversion of water to steam, one gallon of water will absorb, with a margin of safety, all of the heat that can be produced with the oxygen available in 200 cubic feet of normal air

These two factors lead to the formula: Cubic area in feet divided by 200 equals the required gallonage of water for control of a specific area involved in fire.

Experiments have shown that this formula was sufficient as a rule of thumb for the required amount of water, but it still did not establish the necessary rate of flow.

Analysis of time temperature curves prepared from test fires both in Iowa and by the National Exploratory Committee, indicate that results are best when rate of flow is sufficient to introduce the required amount of water into the area of involvement in 30 seconds.

This led to a rule-of-thumb rate-of-flow formula: GPM equals cubic area in feet divided by 100.

The cubic feet in the formula refers to a given cubic area involved in fire. The formula gives an ideal rate of flow for a given fire situation. Its successful application definitely requires pre-fire planning. The following quotation* is interesting at this point:

"Developing a formula for water flow for fire extinguishment is not new. As early as 1925, Engineer Stanzig in Vienna developed a procedure for determining water flow for given fire test situations. Stanzig's experiments and experiences were further substantiated by Chief Fossoult of Anderlecht, Belgium, and later by Chief Folke of Fredericksburg, Denmark.

"Elaborations of the Danish experiments have shown that a formula may be worked out for a minimum superior jet as a function of time. This formula holds only (1) when the scene of the fire is not too large for the jet to control the entire area and (2) if the fire is still principally in the combustion stage without large amounts of glowing coals or other hot substances.

"In other words, in the case of many fires reached in the early (ignition and combustion) stages, it is deduced from the plotted figures arrived at that $Q = t \div 100$.

"Q is the liters per minute per square meter of burning surface, and is in minutes. (The formula, with Q as U. S. gallons per minute per square foot would be roughly $Q = 5/4000$.)

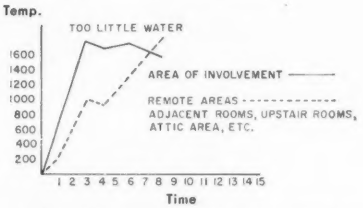
"In practice this means that ½ liter per minute per square meter (roughly ½ quart per square yard) of floor area will produce a fire stream superior to an ordinary fire. If there is already much heat at the scene of the fire, 5 liters per minute per square meter (roughly 1 gallon per square yard) will, as a rule, still be superior.

"The results of the Danish experiments conform to the views of Stanzig. The 'standard' jet or stream of 500 liters per minute (130 U. S. gallons) has thus proved to be rather large. In the majority of cases, 200 liters per minute per 100 square meters (about 50 U. S. gallons per minute per 1,000 square feet) would suffice. Often even half this amount would be sufficient."

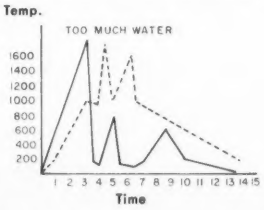
*NFPA Quarterly, April 1947, Vol. 40, No. 4, "Deductions from Research on the Use of Water," H. Adeler, Chemical Engineer, Danish Fire Protection Committee.

When the fire in Wilton Junction barn was at the peak, three nozzle crews advanced and made application for about 20 seconds. Instead of advancing to overhaul, as could have been done, fire fighters let fire come back and a second knockdown was accomplished in the same manner

While test fires are seldom lost, time temperature curves of experimental fires reveal many cases where trouble was encountered either in knockdown or overhaul. The following composite graphs were prepared from the study of many time-temperature curves of actual fires where the formula was tested.

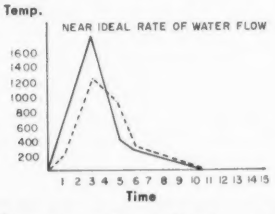


When the rate of flow is too small in relation to heat production and accumulation, there may be only a slight temporary reduction in temperatures in the fire area. Rate of heat production in remote areas may be increased. This graph would also be typical of circumstances where the rate of flow was ideal but proper distribution was not made.

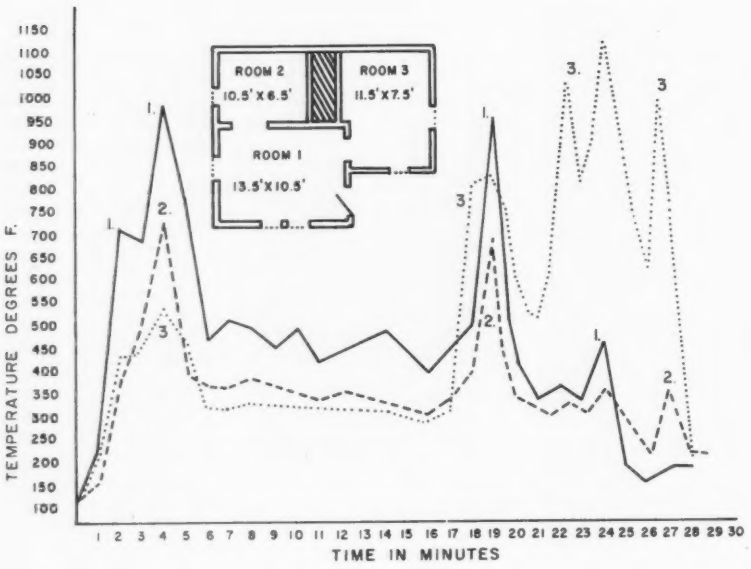


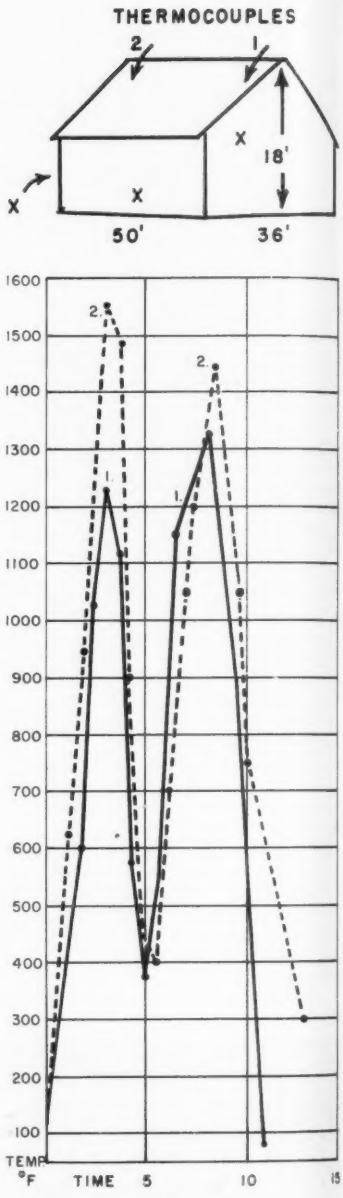
When the rate of flow is substantially greater than ideal, the temperature drop in the fire area will be very rapid, steam production will be limited and heat production will increase in remote areas. Smoke from smoldering fuels will hang in the cool atmosphere of the area complicating overhaul, sometimes to the extent that spot fires will come back as illustrated by the graph. This will also delay control of fires in remote areas especially if the only approach to these areas is through the area of first involvement.

The above conditions can also be created when rate of flow is ideal but application is continued beyond the point where the fire in the area of application blacks out.



When rate of flow is ideal, results will be best. Distribution is proper and the flow is stopped when the fire blacks out





Wilton Junction 8/28/58
Test Fire In Barn
Temp. 90—Humidity 85—wind none
Water flow three 100 gpm fog streams from points x.
Nozzles were allowed to flow for about 20 seconds at the 3-minute point on the first fire and at the 7-minute point for the second knockdown.

(usually 20 to 30 seconds). The area will be filled with steam and temperatures will continue to fall after application is stopped. Steam will flow into remote areas where heat or fire may have spread and temporarily suspend heat production in these areas. Temperatures in the area of involvement will be relatively high—200 to 400 degrees at ceiling level—and smoke in the area will lift rapidly. Overhaul crews will be able to move in to extinguish spot fires in both the main area and the remote areas.

Examinations of these graphs indicate that results were less than ideal when the rate of flow was either above or below the ideal rate. This posed the additional question as to why excessive application of water would complicate fire control.

The only possible answer seemed to be that excessive application would limit steam production and that the smothering effect of the steam produced was a more important factor in fire control than heretofore considered. This lead to setting up tests to determine the relative importance of steam production.

The time-temperature graph was recorded at Story City, August 1954. This was a residential-type structure. The fire involved the three rooms illustrated above. All doors and windows were intact enabling close control of air flow to the fire. The fuel load was composed of light wooden crates and cardboard boxes and was somewhat heavier than would be encountered in the average residence.

The fire was ignited in Rooms 1 and 3 simultaneously and spread into Room 2. The front door was left open for the first two minutes as the men who had ignited the fire watched it build up from the doorway. The temporary leveling off of temperature rise between the second and third minute was a period during which the fire was apparently forced to set up new patterns of air flow when the front door was closed. When the available oxygen in the area was consumed at the end of four minutes, heat production slowed and temperatures dropped rapidly. During the next 12 minutes temperatures rose and fell as the fire breathed.

At the end of 17 minutes the front door was opened slowly to allow temperatures to build up in the area. At 19 minutes, application was made into Room 1 in an attempt to determine if steam produced here would affect the fire in Room 3. The application of water in this case was somewhat clumsy. The nozzle pattern was not adjustable to fit the area and the rate of flow was excessive. Results did show, however, that steam produced in one area would have a marked effect on a fire in another connected area.

Overhaul was purposely delayed to see how long the steam blanket would hold. The graph shows the steam held for only about one minute and the fire in Room 3 came back rapidly.

Application of ideal rate of flow

It was noted in experiments in 1953 that almost all motion of flame, smoke and visible air currents were in the same direction. Specific experiments were set up to determine what effect various nozzle movements had on this apparent natural phenomenon. The direction of motion was to the right, or clockwise, as it was observed from the base.

After many experiments, the following was observed. When rotating the nozzle in a clockwise manner (1) most of the heated gases and smoke were driven away from the nozzleman; (2) any flame close to the nozzleman was driven away from him; (3) the steam formed by the application had a particularly violent rolling action; (4) the fire knockdown, by many timed experiments, was faster and the efficiency of the water was increased.

By rotating the nozzle in a counterclockwise manner (1) a greater portion of the heated gases and steam were drawn toward the nozzleman; (2) any flame close to the nozzleman was drawn back toward him; (3) the steam formed by the application was very inactive and moved in a lazy fashion; (4) the fire knockdown was not particularly fast and efficiency of the water used was reduced.

Several attempts have been made by qualified people to explain this phenome-

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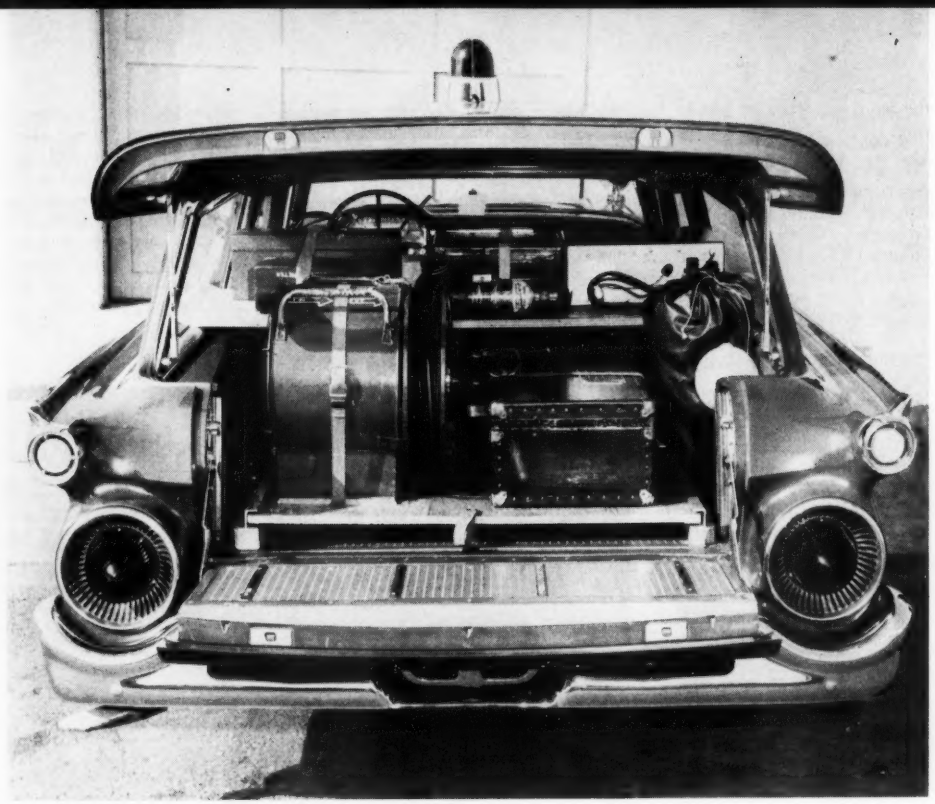


San Diego station wagons carry a large variety of equipment. Clever stowage arrangement makes every item readily available in seconds—*San Diego F. D. photo*

The Station Wagon Assumes New Stature!

Once a plaything of the "Country Gentleman," the modern unit is rapidly becoming a "workhorse" of the fire service

By ROI B. WOOLLEY

ANY CRITICAL REVIEW of the progress of the nation's fire service must include consideration of what is happening in the field of fire department command vehicles, with emphasis on the station wagon. This progressive development is assuming greater importance every day.

Briefly, it has to do with the "new look" which has been given the commonplace "wagon"; its resurgence as a medium for meeting emergencies of many kinds, as well as for the important task of transporting fire department command personnel. Impressive as is the rise of the station wagon in the fire service, it has not displaced the universally popular automobile sedan as a command conveyance, and it is doubtful if it ever will. What it has done is to bring to the fire service a new tool possessing unique and individual characteristics and possibilities for broadening the scope and efficiency of the fire department.

History fails to disclose the identity of the fire chief who first chose the station wagon in preference to the more popular sedan passenger car for his own command vehicle. Nor is it clear just which fire department first realized the potentialities of the station wagon as a fire fighting and emergency unit, capable of performing any one of the different tasks discussed later on.

We do know that the station wagon made its debut in the 1920's as the "estate wagon." In the beginning, its highly finished wood paneling and other plush features, not to speak of cost, limited it more to the "country gentleman" than the average fire chief. It is within the realm of probability that initial experiments to develop the station wagon into an instrument of fire fighting and first aid was first sanctioned by suburban and small-town fire departments. This would be in keeping with the fact that the station wagon became the right hand of the farmer and rancher long before it found universal acceptance with suburbanites and city folk.

Regardless of its ancestry, the station wagon has become a definite entity with the American fire service, particularly with departments of smaller communities and fire districts where its multiple uses are most appreciated. This fact may easily be determined by a check on automobile registrations and even more convincingly, by observing the motor vehicles bearing fire department insignia at county, state or regional conferences of fire fighters.

How and where used

The versatility of the station wagon is evidenced by its wide range of applica-

tion, among the more important of which are the following:

Command Vehicle: For the most part, the station wagon has found its greatest use in the battalion, deputy and assistant chiefs' categories. When employed solely as a command vehicle, the station wagon specifications include the necessary warning signal lights and siren. Mobile radio is a must today. Portable radio units are also considered a necessity for command operations, and are finding their place on command cars to an ever-increasing degree. The final items on vehicles limited to officer transportation are the working clothes of the officer and possibly his aide or driver, and one or more extinguishers.

Commenting on the high percentage of station wagons in use by western fire departments, one fire chief said: "Don't forget, most of our cities and our fire departments out here (Washington and Oregon) are small. Money does not come easily and departments are forced to make every penny go the limit. Even if we chiefs would like to sport nice big chromium sedans, we couldn't do it. But we can get transportation for ourselves and for a lot of very necessary fire fighting and first-aid equipment at the same time for about what it would cost for a good late-model passenger car. That's sort of like making our command cars pay their own freight. Besides, the folks in my town would rather see me riding around in my beat-up station wagon anyway, than in one of those flossy chromium super-streamlined jobs."

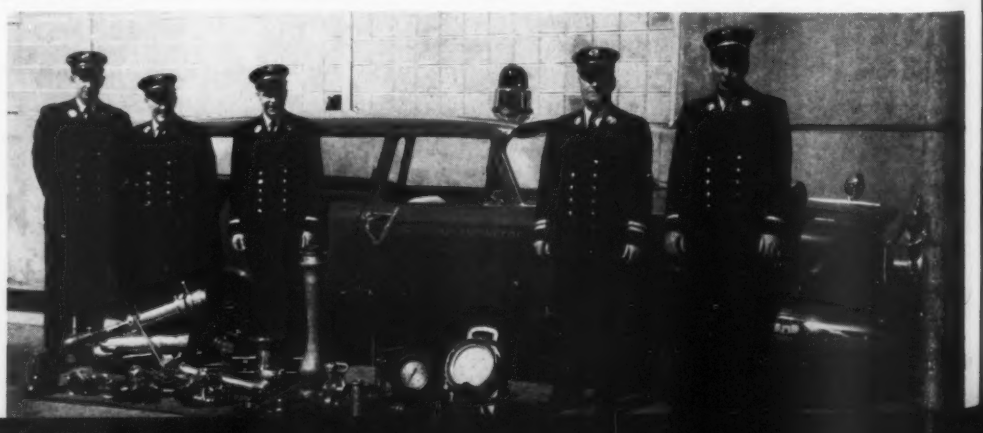
Opinions of fire officers who employ station wagons vary as to cargo carried. The chief reason advanced for not loading the rear section of some vehicles was that the space was desired for first-aid and emergency work, that it would not be convenient and would waste time to have to remove cargo in an emergency. On the other hand, others believed it essential to carry all fire fighting and first-aid equipment that the traffic would bear. One chief pointed out that for every time they required his rig as emergency ambulance, there were many more occasions where the equipment he carried was needed at fires; also, that many of the casualties transported by station wagon when ambulances were not immediately available were ambulatory, and there was plenty of room for them in seats up front.

One other important point was noted. Not only did the various fire fighting and first-aid facilities differ between one station wagon and another, but the methods of carrying cargo also varied greatly. There seems to be little pattern or system for stowage. In few instances, the car's costly radio receiver was so located in the storage area that it might easily be damaged by carelessly packed tools and bulky equipment. Some officers admitted no study had been made of cargo stowage and removal practices.

Chief Thomas Maloney, Jersey City, N. J., Fire Department, employs a station wagon as a command car. In addition to turnout clothing, first aid kit and fire extinguishers, it carries an explosimeter, geiger counter, portable radio and a built-in p-a system

Chief John E. Hoernel, Babylon, N. Y., Fire Department, employs his station wagon as a command car. It is equipped with radio, demand mask, pompier axe, extinguishers for Class A, B and C fires, first aid kit, asbestos and rubber gloves, as well as insulated wire cutters. The rear seat may be folded down and two basket stretchers carried on the rear deck space

Members of New York's Supervising Engineer Unit 1 shown with station wagon assigned and variety of nozzles, gages, fittings, portable radios, eductors and other equipment carried for specialized use



Rescue and Emergency: The utilitarian value of the station wagon is attested by its growing popularity in the field of rescue and first aid, including emergency casualty transportation. Within recent years, impelled by increasing demands made upon the fire department for what may be called extracurricular work, and for first aid, as well as for instituting all possible economy measures in operating departmental equipment, some municipal fire chiefs have been conducting detailed studies of their department's emergency operations, as distinct from fire fighting. Although the results vary, most of them have found that the great majority of service calls are for emergencies which could be capably handled by one or two trained operators with basic equipment readily carried.

One has only to analyze the statistics of the special emergency operations of most of our large metropolitan centers to verify this fact. For example, one large city reported 3,269 patients attended by its fire department squads in a certain year. Of these cases, 531 were classed as "difficulty in breathing," 133 were fainting spells and 708 were grouped as heart attacks. The balance were listed under 63 other causes running all the way from abdominal pains and accidents in automobiles to people trapped in dumbwaiters and unknown. In the very few emergencies calling for assistance beyond the resources and capabilities of the responding squad cars, additional aid was quickly forthcoming when summoned by radio.

The net result of some of these analytical studies has been the substitution of light, fast, maneuverable station wagons for the heavier and slower rescue trucks. This does not necessarily mean shelving the rescue trucks. Far from it! It means greater economy of operation of the emergency service with no dimunition of efficiency. The larger rescue unit is retained in service to respond to multiple alarms and specials calls where its particular facilities are required.

In the City of Toledo, Ohio, Chief Arnold Papenhagen, station wagon squads cover specified districts, responding to all alarms of fire as well as to special

Continued on page 801

Rear view of Chicago wagon illustrates use as an ambulance. Stretcher fits readily into rear deck space without interference from tools or emergency equipment—Chicago F. D. photo

San Diego Battalion Chief Allen reports "in service" to headquarters via radio from maintenance shops. The San Diego Fire Department has five of the versatile "Ranch Wagons"—San Diego F. D. photo

Twenty of Chicago's 30 battalions are equipped with station wagons which carry fire fighting equipment and are readily converted to ambulance service—Chicago F. D. photo

The Role of Chemical Laboratories In the Fire Service

By FRANK HANIFIN

CHEMICALS and chemical processes, which are daily playing a more important part in American life, have motivated progressive fire departments to set up their own chemical laboratories. These fire laboratories supply valuable information for fire prevention, investigation and research. Fire officials with such facilities at their command have found them to be a vital adjunct to the work of the department.

Importance increasing

"Since its inception, the Los Angeles Fire Department laboratory has been of increasing importance and value to this department through increased knowledge and efficiency in handling fire prevention and fire fighting problems." This evaluation of the Los Angeles Department's laboratory by Deputy Chief Donald T. Hibbard could well be applied to the chemical laboratories maintained by other departments.

As Chief of Department Leo C. Driscoll of Boston points out, "the value of such a laboratory to the fire department is that it furnishes the chief of department and the fire prevention division with scientific advice and analysis of flammables whether in the solid, liquid or gaseous phase, in order to classify substances according to their degree of hazard."

Expanding on this statement, Chief Driscoll lists circumstances under which laboratory analyses would be important. Among these are: To determine the cause of suspicious, unknown or undetermined fires; to determine the toxicity of gases and vapors generated in fires; to make rules and specifications for testing decorative material used in public buildings, places of assembly and stores; in field investigations of arson and fires or explosions causing loss of life or extensive property damage; to provide expert testimony in court cases involving criminal or civil action; to determine the thermal decomposition or auto ignition of materials, and finally as the basis for permits to store hazardous materials.

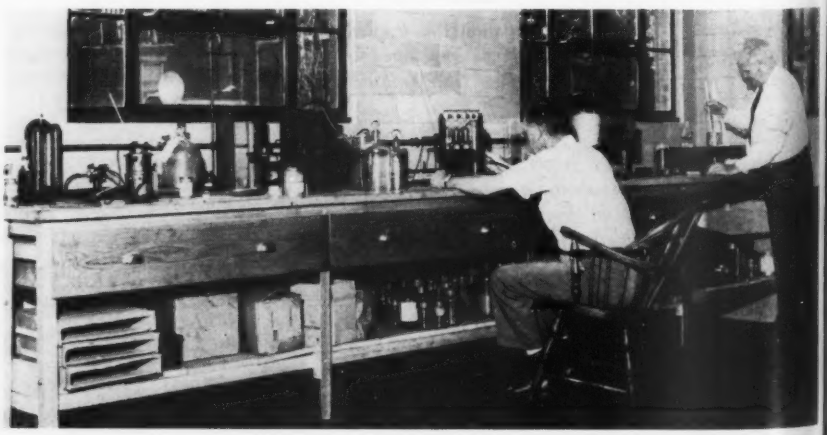
In addition, Robert C. Lyons, senior chemist of the Detroit Fire Department, recommends the examination and testing of fire-retardants and extinguishers. Another laboratory function, according to Mr. Lyons, would be the investigation of leaks and spillage of flammable liquid and explosive gases to determine the type of gas or liquid and the source of the leak or spillage. The purpose would be to protect life and property during the emergency and to correct the cause.

Mr. Lyons notes that since World War II, new and highly flammable and explosive materials are being used in ever-increasing amounts in industrial plants. Many of these products have appeared on the market so rapidly that sufficient analysis and classification have not been made. Fire inspectors and company officers, as well as those engaged in the use of these materials, are not thoroughly familiar with their hazards and are, therefore, not in a position to determine means for their safe handling and storage. "It is vitally necessary that these materials be analyzed and classified immediately if we are to prevent serious fires and accidents which would impair industry," Mr. Lyons states.

Granting the value of a laboratory to a fire department, what basic equipment is required? What would it cost approximately to set up a lab? Who should staff it? What would be the principal functions of the lab?

What equipment is needed?

Necessary equipment would consist of a work bench with an indestructible stone top, cabinets for the storage of chemicals, a fume hood with ventilation to the outside air and an electric refrigerator of approved type for the storage of volatile liquids, with a cold section to



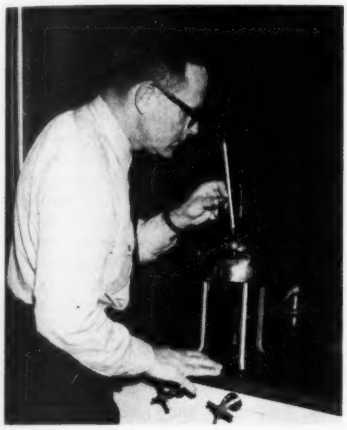
Boston's laboratory is housed in penthouse structure atop fire station
—Boston F. D. photo

bring the temperature of liquids as close to zero as possible for low flash-point tests. It is well to install a sump at the sink to prevent chemicals from entering the sewer system.

The basic instruments would be flash-point testers, both open-cup and closed-cup types; glassware such as beakers, flasks, Pyrex test tubes, graduate measuring cylinders and distilling flasks; distillation apparatus; Bunsen burners; a well-constructed and sensitive balance which will weigh to ten-thousandths of a gram; a pyrometer; gas analysis apparatus; a microscope; a refractometer; Reid vapor pressure bomb, thermometers, and an automatic electric drying oven with thermostat.

Additional desirable instruments would include a spectrophotometer, constant temperature bath; combustible gas indicator; hydrograph; hydrostatic U.G.T. test equipment; anemometer; high-temperature furnace; timer; manometers; thermocouples; potentiometers; ultraviolet light; fractionation, separation and extraction equipment; a spectrograph and a camera attachment for the microscope.

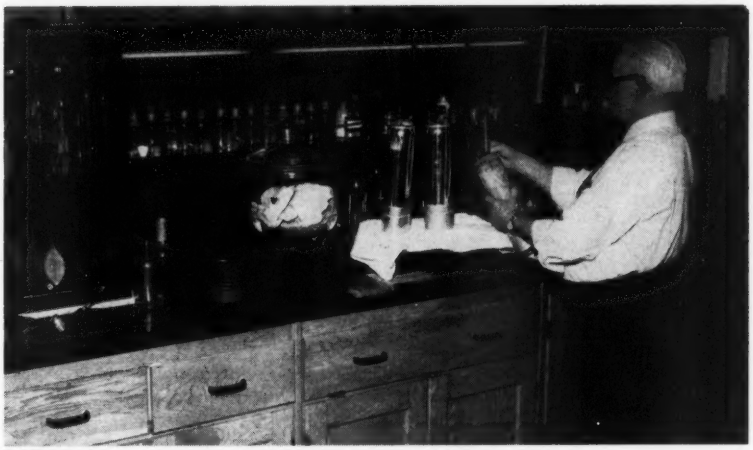
For identification of materials, Detroit has adopted the "Spot Test Method" by Feigl which includes 100 or more organic reagents and a set of inorganic chemical reagents. These reagents would be a valuable addition to the inventory of a laboratory.

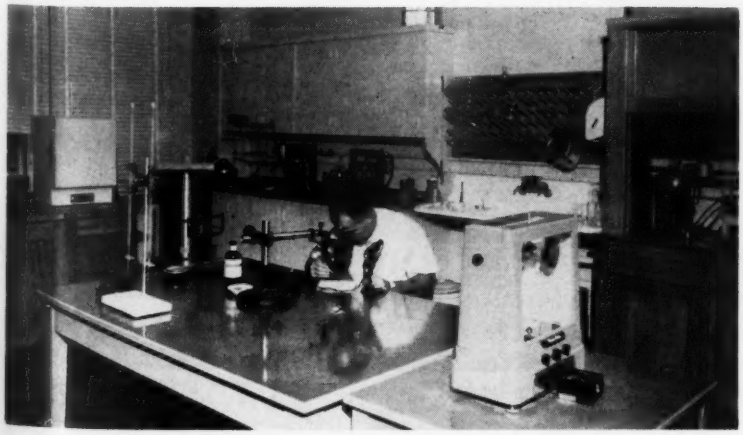


Above: Member of staff of Los Angeles County Fire Department's laboratory uses Pensky-Martens flash point tester
—L. A. County F. D. photo

Right: Senior Chemist Robert C. Lyons tests sample in Detroit's fire lab—Detroit F. D. photo

Below: Member of Los Angeles fire laboratory staff uses binocular microscope. In foreground torsion balance may be seen, while at right under hood are Pensky-Martens and Tag closed cup testers
—L. A. F. D. photo





What will it cost?

Estimates of the approximate cost of setting up a laboratory vary from $2,500 to more than $10,000, depending on the equipment purchased. Chief Driscoll of Boston estimates that basic equipment would cost $5,000. Chief Hibbard reports that the basic equipment in the Los Angeles City fire laboratory would cost in excess of $10,000. To the writer, the Los Angeles lab seems very completely equipped, and Chief Hibbard notes that a good fire laboratory can be started with an original outlay of $2,500. Past budgets of the City of Los Angeles have allowed $1,000 annually for equipment and maintenance of its fire laboratory. Mr. Lyons of the Detroit fire laboratory recommends perusal of the catalogs of chemical laboratory supply companies which describe the types of instruments necessary for this work and list prices. One municipal chemist believes that a well-equipped lab could cost more than $25,000. He notes that a recording spectrophotometer and a spectrograph would cost in the neighborhood of $15,000.

The Boston laboratory receives some income from its work since it charges a fee of $3.00 for each flash test and $1.00 for each sample of decorative material tested.

Of course, the figures quoted cover equipment only. Providing a new building or remodeling available quarters would add to the original outlay. The Boston Fire Department laboratory is a penthouse structure on the roof of one of the fire stations. Detroit's lab is located in fire headquarters, while the Los Angeles County lab is in a separate room at the training center.

Incidentally, Chief Keith E. Klinger notes that Los Angeles County does not maintain a complete chemical laboratory and technician capable of making technical tests or analyses. The chief describes the Los Angeles County lab as a physical laboratory which can make flash tests of flammable liquids, run flame tests of fire-retardant materials, check burning characteristics of roofing materials, test combustible dusts for explosion hazards and make other related tests of materials that have been involved in fire or are submitted for study.

The lab's staff

The Los Angeles County lab is manned by a captain in the fire prevention bureau

Continued on page 798

Industrial Fire Protection and Prevention

By JOHN H. JEBENS

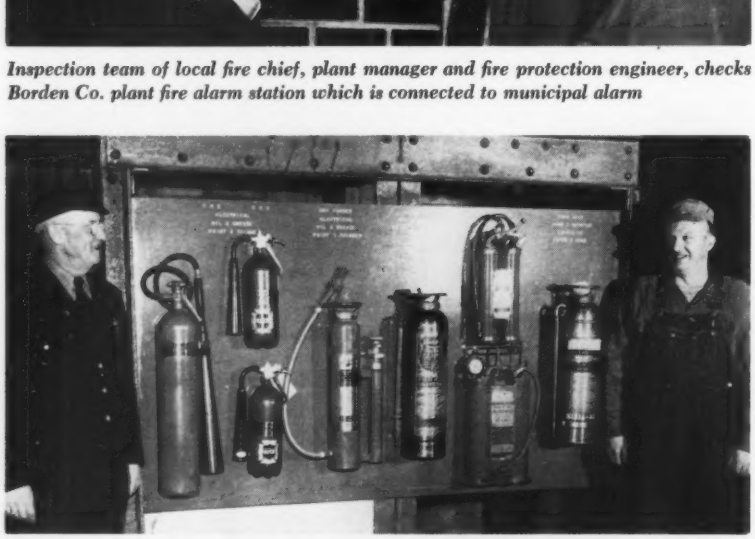
Chief Fire Protection Engineer
The Borden Company

IN THE LAST TWO DECADES, considerable advancement has been made in fire protection for industrial plants. However, there is still ample room for improvement in the educational and practical aspects. Modern industry continues to develop new processes which challenge those devoted to the field of fire protection engineering. It is only through dedicated research and development that new hazards can be controlled or eliminated.

When planning new plant construction or major alterations and additions, architects and engineering personnel should be apprised of the requirements to make the property as safe from fire as good practice may dictate. Budget-wise, operators must evaluate their respective hazards and the calculated risk potential. Some authorities establish percentage allocations of funds in relation to the total engineering estimates of new construction and major alterations. Monies set aside for safety and fire protection design and equipment may range anywhere from 1½ per cent for light-hazard occupancies to as much as 7 per cent in the petrochemical field. On the other hand, an engineering estimate involving alterations may exceed these figures by 50 to 75 per cent because of difficulties encountered in the designs required for existing structures.

Once the plant is in operation, the fire protection funds must be derived from the annual operating budget. Here again, the amount allocated should depend upon the values at risk. Usually the total assigned is far less than required since there is no apparent return on the expenditure. However, sprinkler systems, water supply and fire fighting equipment function only as effectively as they are maintained and handled. Training of fire brigades, preventive maintenance of the previously mentioned equipment and overhaul of various types of production equipment necessary for the protection of life and property are musts. Usually five-tenths of one per cent per year should be adequate to carry out such measures. In some instances, plants with hazardous areas may require more frequent replacement of certain equipment due to use or corrosion. These installations may have as much as 1½ per cent of their budget assigned to fire protection or life safety of their employees.

Inspection team of local fire chief, plant manager and fire protection engineer, checks Borden Co. plant fire alarm station which is connected to municipal alarm



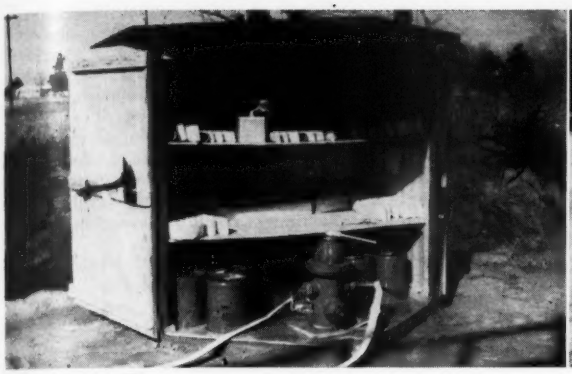
Extinguisher board maintained in an industrial plant permits easy worker indoctrination, informal individual review as well as ready accessibility in the event of fire
Photo by Rudy Moc Studio—courtesy Alan Smythe, vice president, the Thew Shovel Co., Lorain, Ohio

The planning stage

The planning stage should incorporate a survey of the site to ascertain: (1) Available water supply (public or private) in sufficient quantity to cope with occupancy hazard; (2) topography of the area (this is particularly necessary for location of certain processes and storage areas of flammable liquids and gases); (3) adequacy of municipal fire fighting forces available within a 3-mile limit; (4) approaches to the building site for access by apparatus under adverse weather conditions.

The technique of reviewing plans of new construction or remodeling has become an effective means for planning fire protection prior to actual construction. The value of so-called "engineering plan review" has met with such success that a number of state agencies throughout the country have integrated this procedure in their industrial health and safety programs. A technical conference between the fire protection engineer, the architect and management brings out the necessity for physical separation of hazardous from nonhazardous operations in the plant, requirements with respect to safe handling of processes in flow and in storage, as well as adequate egress features for life safety.

Furthermore, such conferences determine compliance with the basic provisions of existing codes and good fire protection engineering practice. In many instances, no set rule or standard may



Typical industrial hose house of approved design. Leader lines are connected to hydrant by means of gated wye. Hose, foam liquid and tools are readily stored for easy access

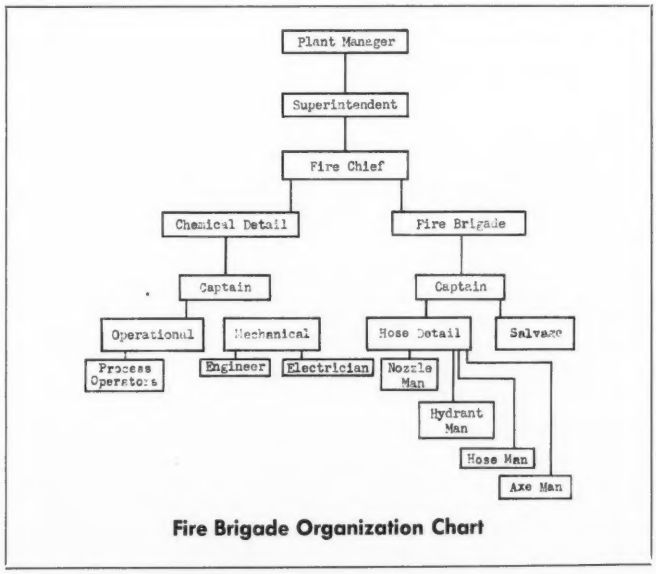
Inspection team checks ground continuity of drum storage of flammable liquids with ohmmeter. Practice was established following suggestion from monthly safety meeting

exist and technical background assistance will be needed to determine the extent of the requirements for the particular plant. However, it must be kept in mind that codes are the "minimum requirements" and are not necessarily the most desirable preventive measures for an installation. Such rules should be used as a fundamental basis upon which to build your processes and structures.

In modern design, lightweight web or bar truss roof members are widely used. Unless adequate protection is provided, fire will make short work of such a structure. Enclosure of the entire member in a skirt of metal lath and 1½ inches of vermiculite and gypsum plaster will offer a good two hours of protection. Steel "H" or "I" beams may be placed in a manner to permit a precast roof to use the lower flange for support in one-story buildings, thereby only exposing the surface of the lower flange to the fire potential. In warehouses or storage areas where fire may develop high calorific heat values, it is most important that proper protection be given the steel members of the building.

Where wooden trusses or roof members are used, a wood preservative impregnation may lengthen the failure time, thus giving resistance to fire superior to untreated wood. Research has made much progress of recent years in the application of fire-retardant coatings which reduce the spread of fire.

Where masonry walls are of less than brick or reinforced concrete in construction, they should be scarfed into the columns. In the case of concrete block, it is preferable that the column be a brick pilaster with scarfing arms at least every fourth block depending upon design loads. Although somewhat more costly than conventional column design, it gives considerable more rigidity and strength to the structure.



Fire Brigade Organization Chart

Members of Bainbridge, N. Y., Borden plant brigade practice extinguishment of vinyl acetate chemical on water during drill session

Architectural trends today lean toward windowless walls, primarily because of the wide use of air conditioning. When such structures are contemplated, the designer should review fire fighting tactics and visualize how a fire can be suppressed without adequate access by the fire department. With the installation of removable bubbles or skylights, or those actuated by a spring-loaded, fusible mechanism, adequate ventilation of hot gases may be possible. However, access by hose lines must still be made available. This may be accomplished by locating soft spots of 4-inch tile or concrete block at strategic locations. Such "knock-out panels" can be identified by means of a rosette, medallion or other suitable means

of identification. The municipal fire department, when advised of such panels, will have an immediate access for normal fire fighting tactics.

With total air conditioning, additional hazards are added to the complex problems of design. Duct work may carry hot gases and flame to remote areas in a building unless adequate cut-offs are provided by fusible dampers (see NBFU Pamphlet No. 90-A). Duct work is usually installed in the void created by a hung ceiling. This can cause serious delays to fire attack in such areas. It is of extreme importance that such voids be constructed of noncombustible materials.

Management should establish a method of period inspections whereby the entire property is subjected to a fire prevention inspection. Fire causes are well known through carefully recorded statistics during the past years. Most fires start with conditions which may be easily recognized not only by the fire protection engineer, but also by the conscientious management staff. Most fires, therefore, may be prevented by the simple process of correcting such conditions.

Suggested Inspection Check List

	Yes	*No*
Are extinguishers in good condition?	☐	☐
Are they in proper locations?	☐	☐
Is date of recharge visible?	☐	☐
Are hydrants in good condition?	☐	☐
Are they operating freely?	☐	☐
Are they readily available (no obstructions)?	☐	☐
Is sprinkler system in good condition?	☐	☐
Are heads unobstructed?	☐	☐
Are sprinkler heads clean and free from paint?	☐	☐
Was fire alarm system test O.K.?	☐	☐
Was fire detection system test O.K.?	☐	☐
Is housekeeping good?	☐	☐
Are oily rags stored in covered cans?	☐	☐
Are aisle spaces kept clear?	☐	☐
Are unnecessary combustibles removed?	☐	☐
Are combustibles stored near stacks, steam lines, etc.?	☐	☐
Is waste or excelsior storage proper?	☐	☐
Are "No Smoking" areas posted?	☐	☐
Are paints, thinners and volatiles properly stored?	☐	☐
Are cleaning solvents of approved type?	☐	☐
Are fuel oil tanks and piping in good condition?	☐	☐
Are gasoline pumps and fittings in good condition?	☐	☐
Have welding aud cutting permits been obtained?	☐	☐
Have stand-by precautions been taken during work?	☐	☐
Is watchman performing assigned duties?	☐	☐
Does electrical equipment meet electrical code?	☐	☐
Are all circuits of proper size to handle load?	☐	☐
Is all wiring installation approved?	☐	☐
Are switches provided to de-energize temporary circuits?	☐	☐
Are temporary circuits de-energized at end of work day?	☐	☐
Is explosion-proof electrical equipment provided where volatiles, paints or flammable gases are present?	☐	☐
Does electrical equipment meet code provisions in areas where dust conditions do exist?	☐	☐
Are combustibles stored near electric panels or light bulbs?	☐	☐
Are fire doors in good condition?	☐	☐
Do all operate freely?	☐	☐
Are fusible links clean and free of paint?	☐	☐
Are self-closing devices in good condition?	☐	☐
Are fire-doors, shutters, and wire glass windows properly maintained?	☐	☐
Are all exits clearly marked?	☐	☐
Do doors open with line of travel?	☐	☐
Are exits free of storage?	☐	☐
Are they free of encumberances?	☐	☐
Is respiratory equipment provided?	☐	☐
Is it in good condition?	☐	☐
Are canisters and tanks ready for use?	☐	☐
Are special devices required for detection of flammable liquids or gases in good order?	☐	☐
Are electrostatic voltmeters used to full advantage to prevent serious concentrations of dusts or vapors?	☐	☐

Results of self-inspection reports should be reviewed at the monthly safety committee meeting. The committee should be made up of management, engineering, development, plant maintenance and operational personnel. Their duties are to review all accidents, discuss new processes, iron out defects in present operational processes and bring to the attention of the "front office" any condition which might result in "downtime" for the plant or any department.

A particularly desirable result of such committee functions is the review of conditions based upon the unfortunate experiences of others. Such experiences, well analyzed, can act as a guide to help eliminate or alleviate hazardous conditions in the plant.

In addition to electrical faults and allied hazards, there are three "gremlins" which under certain conditions create serious fire potentials in a plant. These are flammable liquids; welding, brazing and cutting operations; and poorly planned processing.

Flammable liquids must be stored and used with due caution. Movement of such materials create electrostatic charges which may ignite vapors present whenever such liquids are in use or in storage. Electrical equipment, unless installed according to code, exposes a plant to explosion potentials where volatile liquids and vapors are present.

Regardless of the type of plant, whether engaged in the use or manufacture of a hazardous material or a plant handling products normally assumed to be nonhazardous, the seriousness of operations involving the use of welding equipment has been greatly underestimated. Such equipment should be used with extreme care, making certain that protection is afforded combustibles and flammables by means of segregation, ventilation, use of flame-retardant curtains and shields. Above all, when such equipment is shut down, a continuous fire watch should be maintained for at least an hour. The affected area may be subject to ignition for that period of time.

Certain processes in themselves create a fire hazard due to any number of causes. Machine bearings become overheated; flammable vapors emit from certain materials; drying ovens may overheat products in process; dusts may be created and many other faults may develop. It is only through thorough study and careful planning that a fire potential may be avoided.

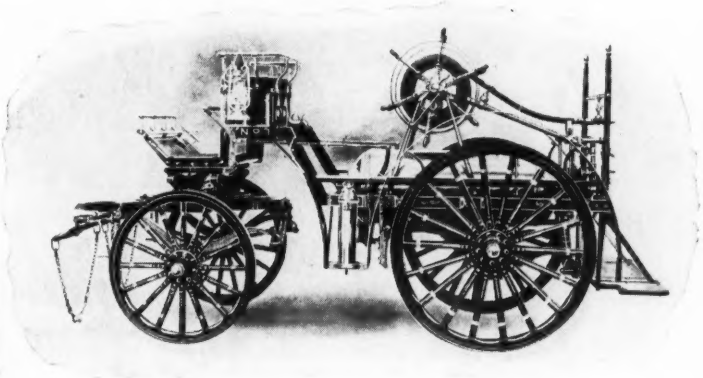
Explosion hazard

An explosion is "the sudden and violent increase of pressure." This may take place through a rapid chemical reaction or sudden release of gases or vapors under pressure. The latter is of a physical nature as exhibited by the rupture of an air tank or boiler. Where chemicals of a volatile type are involved, fire is certain to follow. A good many industrial plants have suffered severe losses from explosion where such a hazard was unsuspected. A review of all plant operations and equipment by competent personnel should be

Continued on page 804

COPPER & BRASS

—The Chemical Engine Era!



By CLARENCE E. MEEK*

FOR ALMOST the entire era of horse-drawn fire apparatus—a span of over 50 years from 1865 to 1920—the chemical fire engine was an important piece of apparatus in all well-equipped fire departments. It used soda and acid for pressure, and to a controversial degree, as an extinguishing agent.

For a well-remembered period during my early career as a fireman I was assigned to a horse-drawn chemical engine and can write with personal knowledge of this type of apparatus, with its large tanks of copper and almost as much brass work as a steam fire engine. The constant cleaning of the soda-acid solution from the copper, and the polishing of brass really got me down in those days of continuous duty.

With the advent of self-propelled machines with motor-driven pumps for applying water on fires from the apparatus tanks, the chemical reaction engines gave way to "booster" equipped units. Since then the designation of "chemical companies" has all but disappeared from fire service terminology.

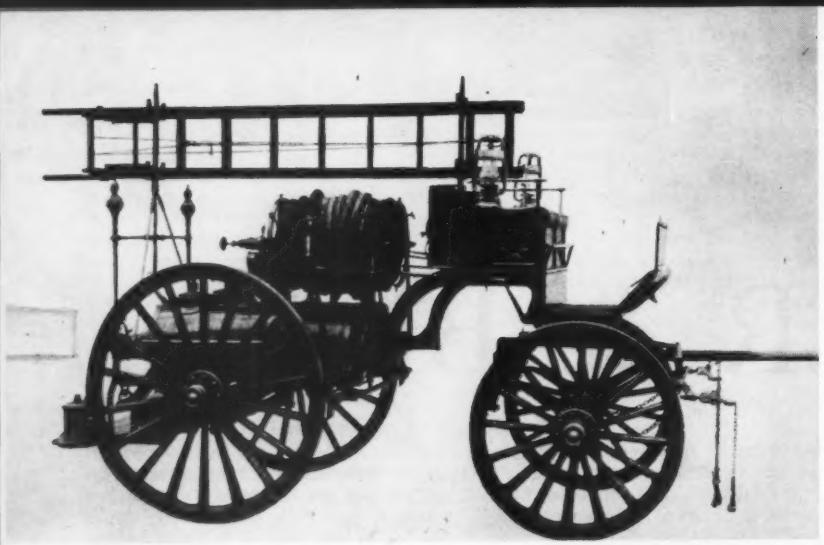
The first known record of experiments with the application of physical forces—other than dousing with water—for fire extinction followed an occurrence in Linz, Germany, in 1666, when a blaze started in a wooden storage shed which contained some gunpowder. When the fire reached the powder, it detonated and completely extinguished the blaze, much to the amazement of the owner and others who had converged on the scene. The fact that little damage was done by the explosion was a particularly puzzling phase of the incident.

The same year there was another report of a fire in the bedroom of a German farm house where the farmer had a small quantity of gunpowder. When the fire reached the powder its explosion put out the blaze and in a few minutes' time there was so little smoke the room was entered without discomfort.

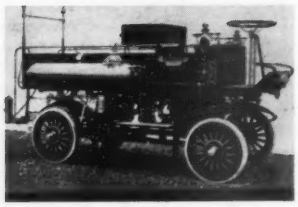
The discussions and experiments arising from these incidents eventually resulted in the patenting of an extinguisher by Zacharias Greyl. He used the explosive force of gunpowder to throw water on a fire, combining the blasting effect of the explosion with water cooling. The phenomena involved was discussed in a paper published in Germany under the translated title of "Extinguishing Fires with Powder."

Greyl's device was a cylinder on wheels approximately 24 inches x 24 inches, which was almost filled with about 45 gallons of water, with enough space left for a 2-inch diameter metal tube filled with about 20 pounds of pow-

*Honorary Battalion Chief and Librarian, New York Fire Department Library.

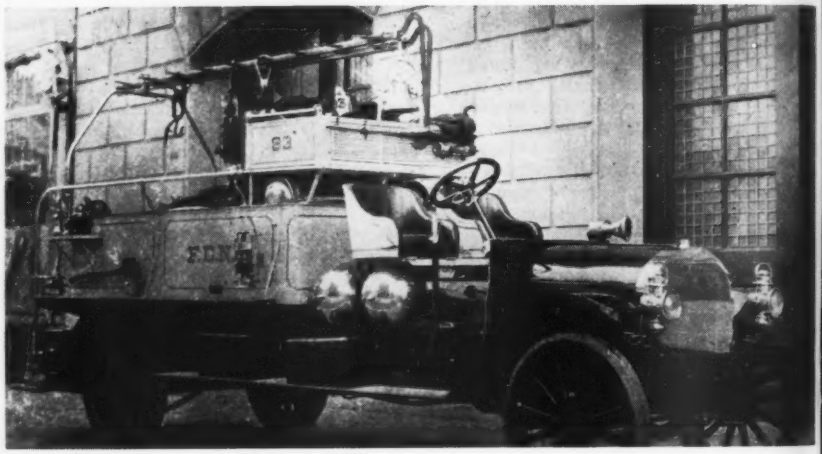


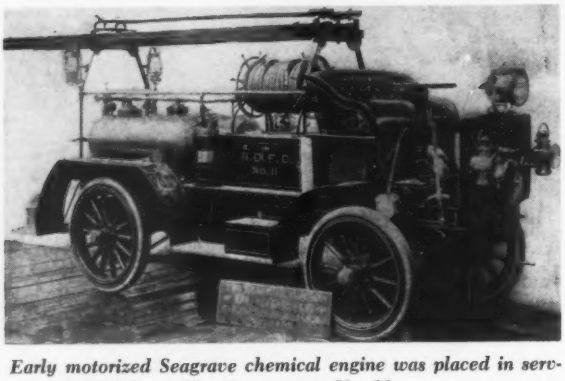
One of the first Seagrave chemical engines. The manufacturer was located in Detroit, Mich., at the time



Steam-powered combination hose and chemical built by International Fire Engine Co., said to be the first motorized apparatus

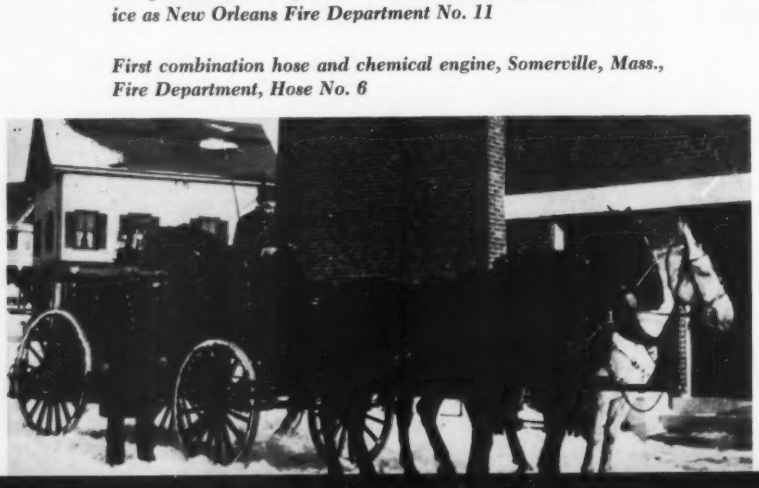
Mack combination hose and chemical was one of early motorized units. The New York Fire Department bought 25 in 1912





Early motorized Seagrave chemical engine was placed in service as New Orleans Fire Department No. 11

First combination hose and chemical engine, Somerville, Mass., Fire Department, Hose No. 6



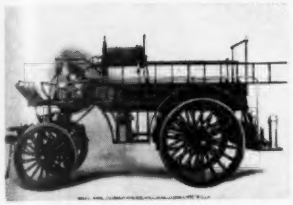
der. The powder tube contained a fuse which could be ignited before rolling the extinguisher into the fire, or it could be placed so it would be ignited by the blaze.

A few years after Greyl's death in 1720, a Major F. Atkins used the Greyl principle for extinguishing ship fires. It was reported that the German Admiralty was greatly pleased with its success. In later years, Hopfern, of Holland, and Godfrey, of Great Britain, duplicated and improved on the Greyl device.

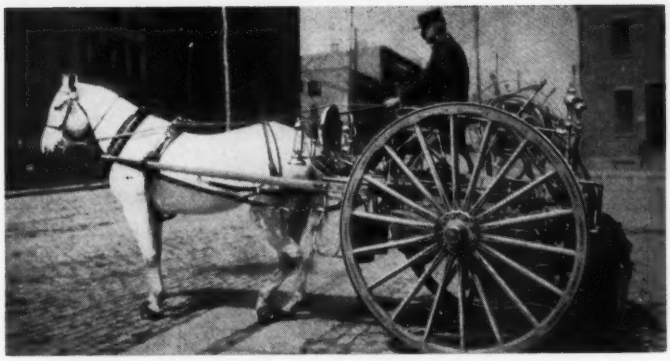
In 1864 Dr. F. Charlier and A. Vignon, an engineer, of Paris, used a bicarbonate, water and acid combination for the first time. Subsequent developments of this principle were quite rapid, and records of the New York Fire Department show that soda-acid extinguishers were installed in all fire stations in 1868. These were placed adjacent to watch desks and were carried by men sent out on foot in answer to verbal alarms of minor fires.

Fire apparatus

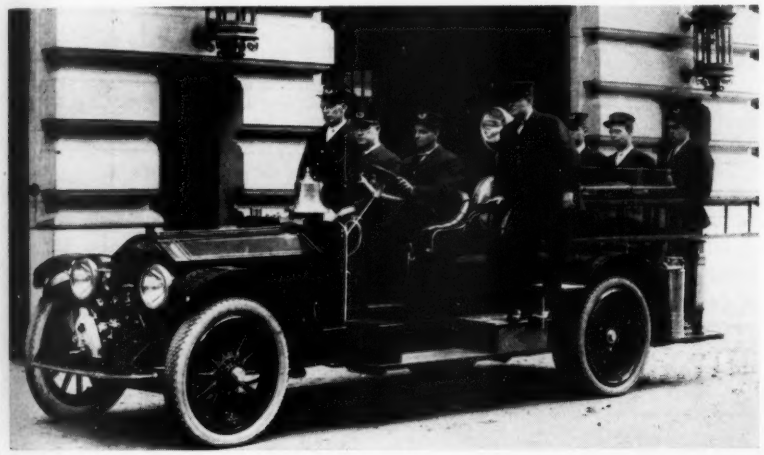
The first chemical apparatus put in fire department service, and an interesting

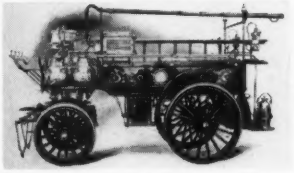


Champion - Babcock - Holloway combination single tank wagon, built by American LaFrance for the Jersey City Fire Department



Champion 100-gallon single tank built by Fire Extinguisher Manufacturing Co. for Brooklyn Fire Department, 1896





Holloway double-tank combination wagon by LaFrance mounted scaling ladder

First booster apparatus had front-mount pump and water tank in hose bed. Built by Ahrens-Fox for Cincinnati Fire Department and demonstrated at 1913 I.A.F.C. conference

Babcock-type 80-gallon twin tank with rubber tires. Chemical Co. 2, Boston Fire Department, circa 1905

forerunner of the chemical engine, was the "fire extinguisher wagon" equipped with 10 hand extinguishers, commissioned by the Boston Department in 1871 and designated as Extinguisher Co. No. 1. Two more of the "fire extinguisher wagons," each carrying 25 extinguishers, were put in service at Boston in 1872.

As far as we can learn from considerable researching the scarce contemporary literature, the Babcock Manufacturing Co. of Chicago was the first American builder of wheeled chemical engines for fire department service, their first chemical unit being delivered to the Chicago department in 1872. The following year Boston bought one each of the Babcock and Holloway chemical engines and embarked on a program which eventually gave them 12 chemical engine companies.

We have a copy of a house organ, *The Babcock Fire Record*, dated July 1874, in which these claims are made:

"Carbonic acid gas is both the working and extinguishing agent, which, bulk for bulk, is 30 times as effective as water, the 200 gallons of the first class engine being equal to 6,000 gallons of water. Besides, it uses the only agent that will extinguish burning tar, oil, and other combustible fluids and vapors. One cylinder can be charged while the other is working, thus keeping up a continuous stream."

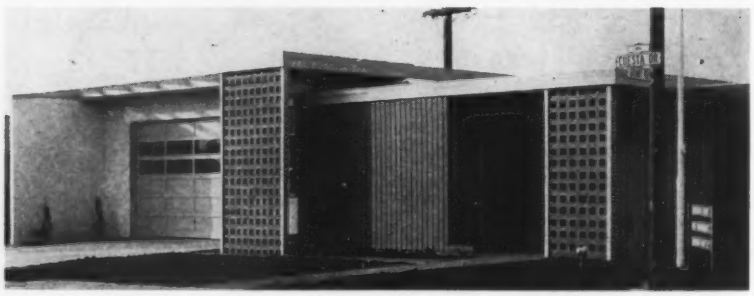
The first Babcock engines were of the upright stationary-tank type. The acid was mixed with the solution by inverting a lead container. A hand pump was provided for refilling the chemical cylinders from water sourses.

Charles T. Holloway, Baltimore, entered the apparatus picture in 1873 with the sale of his first wheeled chemical engine to the Boston Fire Department. Throughout the whole horse-drawn era

Continued on page 814

Ultramodern stations in Boulder, Colo. The new Central Station (above) is a three-level design with dormitory six steps above the apparatus and office floor. Dining and lounge area is nine steps below. Combination training and hose tower is at rear. Station 2 (opposite page) is a one-story building with a multipeaked roof. Hobart D. Wagener is the architect—Photos by Roberts

New Fire Stations Across Nation Combine Beauty and Utility



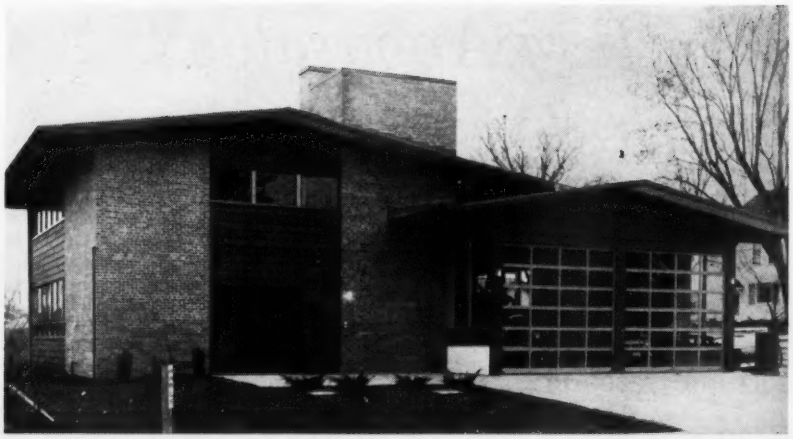
Mountain View, Calif., Station No. 2, housing two companies, is part of a capital improvement plan which includes four new stations. Single-story construction was designed by Architect Joel Bowman to conform with homes in the area

—Mountain View F. D. photo

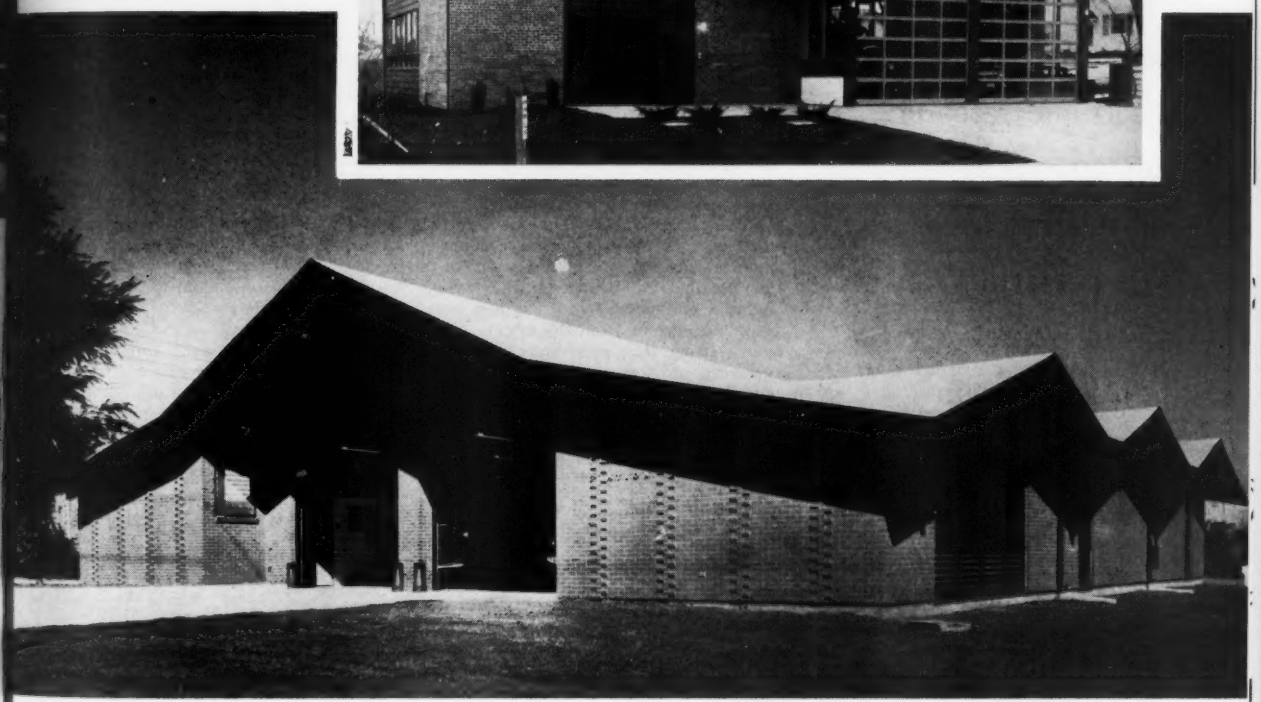
No. 12, one of four new air-conditioned stations recently opened in Houston, Tex., is a single-story building in the residential area. It contains the latest automatic hose washing machines and electric drying cabinets—Houston F. D. photos

PRESENT BUILDING PROGRAMS of fire departments point up how readily the fire service has accepted the architectural mode of the era. The examples shown here indicate the trend continues to move farther from the traditional "official" structure to the modern one-floor and multilevel type of stations.

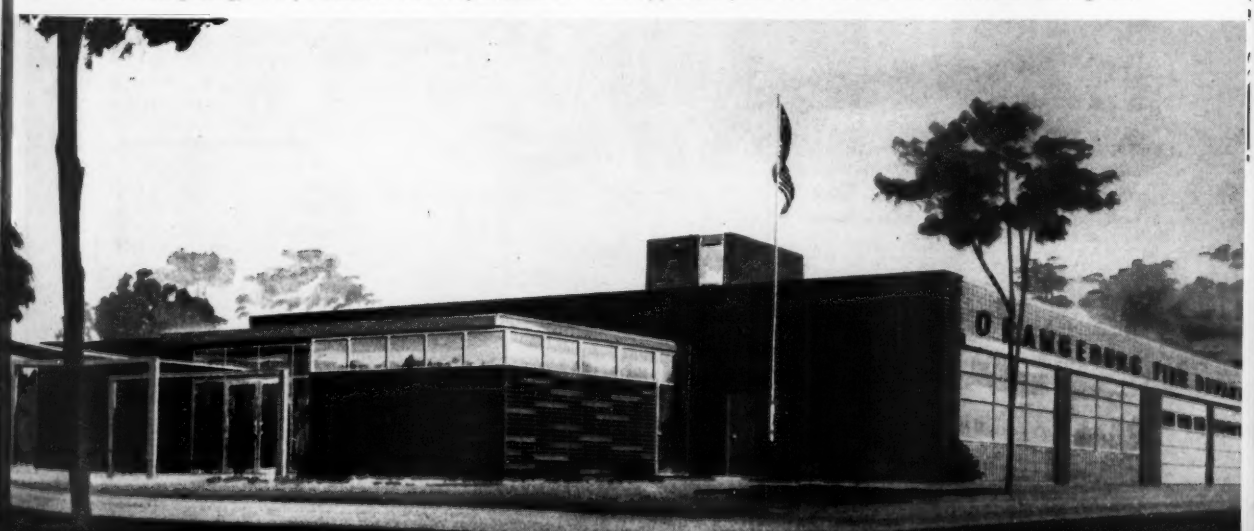
All of the buildings illustrated are designed to permit maximum use of floor space in serving the unique functional needs of the service, and at the same time be identified as an integral part of the surrounding neighborhood. These points reflect great credit on the good taste of the responsible municipal officials.



Cedar Rapids, Ia., Station No. 5 is an excellent example of a side-to-side multi-level building
—*Cedar Rapids F. D. photo*



Architect W. Thomas Schaardt recently designed this imposing station for the Orangeburg, N. Y., Volunteer Fire Department. It will house six vehicles and folding partitions permit assembly room and apparatus floor to be used as an auditorium seating 450



TRENDS

In Fire Apparatus Electrical Systems

Applications of electronic research are increasing the utility and versatility of the vehicle ignition system

By DONALD M. O'BRIEN*

THE ELECTRICAL SYSTEM of any modern fire apparatus is presently a somewhat complex network. In addition to providing for practically foolproof ignition, it must supply the heavy demand of all lights, flashers, sirens, radios, power amplifiers and traffic control transmitters and still work reliably under all types of weather and fire service conditions. This combination of wires, relays, contacts and batteries, plus the working load, is one of the few parts of all fire fighting equipment which must function continuously from the time an alarm is received until the apparatus returns to quarters.

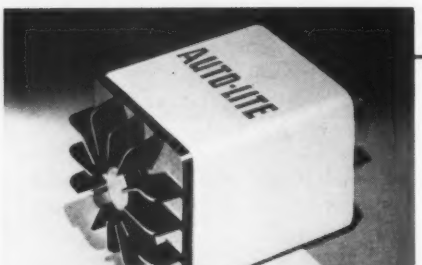
Add to this consideration the fact that the fire service is constantly mounting more electrically operated equipment on its apparatus to the point where floodlighting and power tools are now being supplied current from the engine generators. At one time these units were called upon to provide only the ignition and signaling requirements of the apparatus itself.

This trend towards increasing the demands on the electrical system has had beneficial effects from the standpoint of progress. To meet the needs, manufacturers have shown constant improvement in their products and have introduced new methods to overcome previous shortcomings.

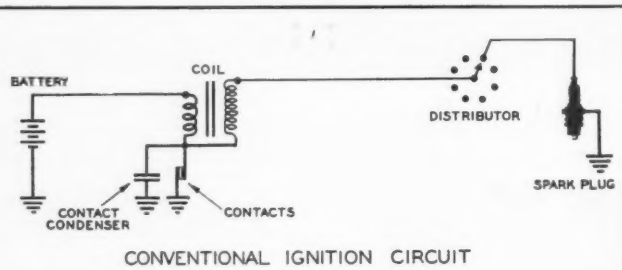
The radio manufacturers have taken a large lead in this respect. A modern mobile transmitting-receiving unit may have a stand-by current drain of as little as 400 ma. This is less current than many pilot lights require! Compare this to the 6 to 12-amp load of only a few short years ago. Such progress has become possible due to technical advances which permit circuit features unheard of 10 years ago.

One of the most spectacular additions to the electrical system of fire apparatus was the introduction of the alternator shortly after World War II. It was developed to permit efficient mobile radio operations in the police, utility and taxi services and quickly adopted by fire departments, as radio became more widely used. The advantage of providing sufficient output to keep batteries charged when the apparatus engine is running at idle, appealed to everyone concerned. Its capabilities of providing excellent efficiency at high speeds is sometimes over-

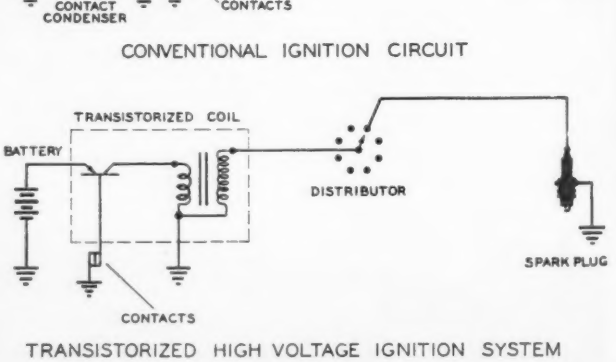
*From a talk before the Fire Apparatus Maintenance Association at Holyoke, Mass., April 1959.



Above: New ignition system contains high-voltage coil and transistor in single case. Fins are part of "heat sink" to facilitate cooling of transistor



CONVENTIONAL IGNITION CIRCUIT



TRANSISTORIZED HIGH VOLTAGE IGNITION SYSTEM

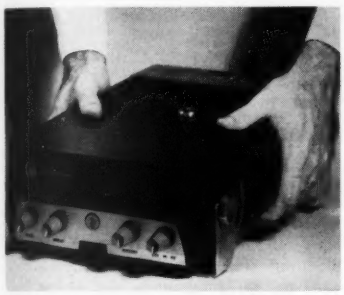
Right: Circuit diagram of conventional ignition system and new transistorized system. Capacitor is eliminated and points carry only low voltage in new system

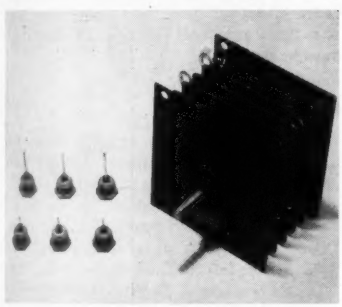
—Photos courtesy Electric Auto-Lite Co.

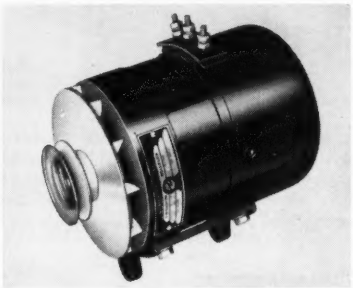
Right: ***Comparison of old-style mobile radio unit with late model. All tubes, vibrators and dynamotor on left are replaced by handful of transistors on right in new units***
—Motorola photo

Below left: ***In addition to lower current requirements, new mobile radio units require very little mounting space. Elimination of many tubes by transistor permit compact, yet rugged, design***—*G-E photo*

Below, right: ***Recently introduced, the new alternator with silicon rectifiers is a self-contained unit. Conversion kits are available for modernizing those which employ the separate selenium rectifier stack***
—Leece-Neville photo







Left: Silicon rectifier components (left) contrasted with selenium rectifier (right). Small units mount directly in alternator case and eliminate additional wiring and mounting problems

Below: Components of fully transistorized voltage regulator bear no resemblance to standard equipment. Major wiring is printed on circuit board—*Delco-Remy photos*

bank of batteries into the charging position as a routine matter.

We have been getting better batteries for automotive duty in the last few years and recently a replaceable cell battery was announced. The idea on which it lays claim to merit is that most battery failures occur in a single cell. Unless the department maintenance shop is equipped to rebuild batteries (and there are very few in the country), it usually means discarding the entire unit and purchasing a new one.

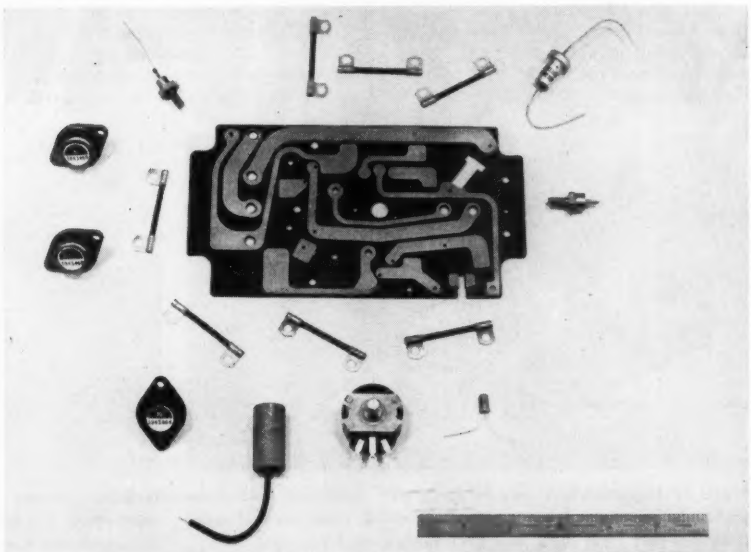
With the new battery, the offending individual cell is merely removed, since it is a complete unit in itself, and a replacement added. In the long run, this may tend to lower battery maintenance costs and permit uninterrupted operations.

Alternators are somewhat of a study themselves. These units generally deliver

Continued on page 807

looked, except by automotive engineers and ignition experts.

Another benefit concerns battery life. The latter is definitely extended, due to the lower incidence of "cycling" or discharging and charging. In this respect, the alternator has practically revolutionized the battery-charging methods of the fire service. Using the charger at least once a week and sometimes more often to bring the apparatus battery up to 1250 has been a regular chore for drivers. Two years ago, FIRE ENGINEERING ran a survey on charging methods and use of alternators. Some of the answers were startling to one accustomed to the oldtime methods. One department reported that in a certain company the charger had been used only once in the previous 12-month period. This was necessary, due to the driver's failing to switch the alternate



Section of highway where propane tanker stood is empty after explosion. The chassis was blown into one field and tank hurtled up roadway into another. Trailer that rammed tanker is at right; Liberty Hose Company pumper at left

Propane Tanker Explodes, Killing 11 Persons

EXPLOSION of a propane gas tank truck at Red Church in Schuylkill County, Pa., on June 2, killed 11 persons including a volunteer fireman, and injured about 15 other persons. The tanker, carrying 7,000 gallons of the liquefied petroleum gas, had stopped on busy Route 122 to permit a school bus directly ahead of it to pick up children. A tractor-trailer in back of the tanker skidded on the wet highway and crashed into the rear of the tanker, which immediately spurted flames. The trailer driver managed to escape. The driver of the tanker ran back with an extinguisher, but saw at a glance that he could not cope with the fire. He ran up the road and asked two motorists to sound a fire alarm. Meanwhile, the school bus in front of the tanker and a second bus, stopped back of the tanker, were driven away from the fire.

Chief James R. Marotte of Friendship Hose Company No. 1, Orwigsburg, received a call at about 8:20 a.m. that a tank truck was on fire at Red Church. He immediately went to the firehouse to sound the alarm, but found that someone had already sent it in. When Chief Marotte judged that he had sufficient men on hand, the company responded to the fire.

Blast unexpected

From past experience, reading and training, Chief Marotte was under the impression that the tank truck would not explode. In an interview later, the driver of the tanker said that at several fire and safety schools he had attended, he had been told that if a truck caught fire and the safety valves at the top of the tank were open and flames coming out of them, the tank could never explode. A fireman of Friendship Hose Company confirmed that he and the other firemen were working under the impression that the tank would not explode if the safety valves were working.

Chief Marotte told FIRE ENGINEERING that he decided to let the gas burn itself out, and concentrate all efforts on saving a nearby farmhouse. He instructed his men to coat the side of the house with foam. Realizing that the 600 gallons of water and the limited supply of foam on the fire truck would not last long, the chief called for help by radio. Meanwhile a group of some 30 spectators, standing as far as 300 feet from the truck, were watching the fire. A state trooper, assisted by fire police and firemen, attempted to hold the group back, and several times warned the bystanders to move farther back. The firemen had made several applications of foam to the farmhouse while Chief Marotte went around to the other side of the house to check on falling wires. Then, roughly a half-hour after the collision, the chief heard the tanker explode and saw a ball of fire shoot up the road past him and hit a retaining wall in front of the Red Church.

Gigantic missile

The LPG tank was ripped from its chassis and, spurting flames, shot jet-like more than 300 yards up the road. Bodies were hurled through the air by the force of the explosion, and parts of them were spread over a wide area. One body was found some hours later in a field 600 feet from the scene. Debris, jagged metal from the trucks and stones from the retaining wall mowed spectators down. Earl L. Hillbish, a member of Friendship Hose Company was one of those killed.

Continued on page 797

Force of the explosion can be estimated from end section of tanker in foreground, and main tank which came to rest more than 900 feet from blast site. Both ends were blown out

Wrecked chassis of disintegrated tractor is mute evidence of blast force. Location is some distance from site where collision and explosion occurred—*photos by Stanley Gring*

presents

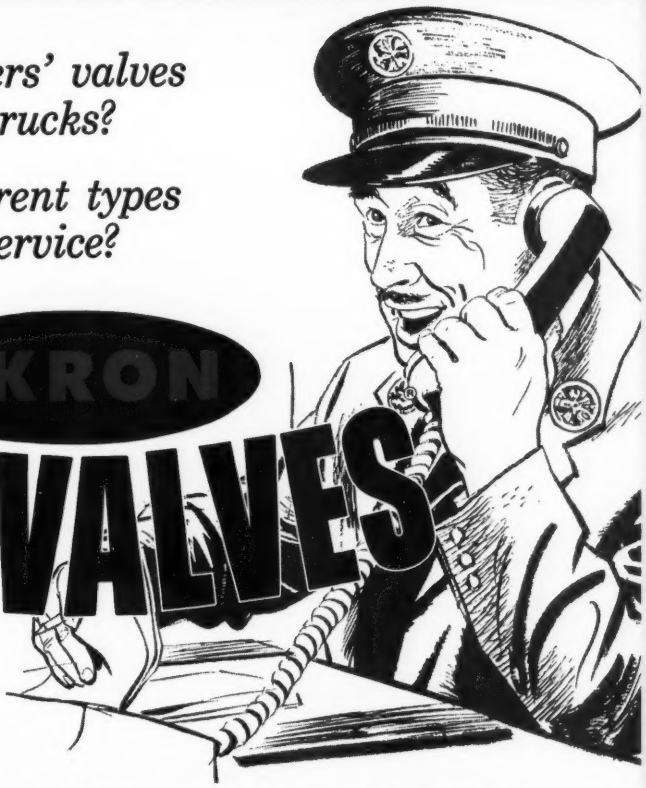
AKRON BRASS
FIRE FIGHTING EQUIPMENT

16 PAGES OF NEW BETTER FIRE EQUIPMENT

WORTH SAVING—TEAR OUT HERE

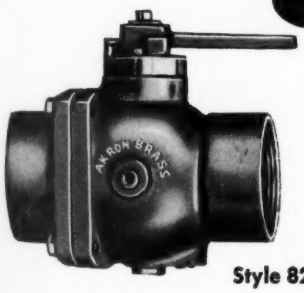
WHY *accept plumbers' valves on your fire trucks?*

WHY *have 10 different types of valves to service?*



AKRON

Specify UNI-VALVES



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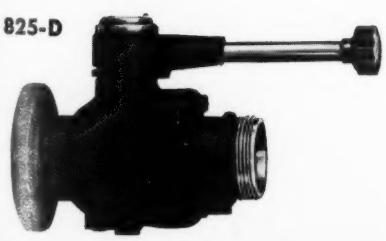
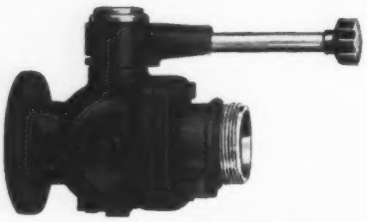


When you buy a fire truck specify Akron Uni-Valves. Every valve on your truck, whether 1", 1½", 2", 2½", is the same basic valve. In-line, suction, discharge, the valves in your gated wyes are constructed so that all parts are interchangeable within the same size range. Turn the page and get the full story.



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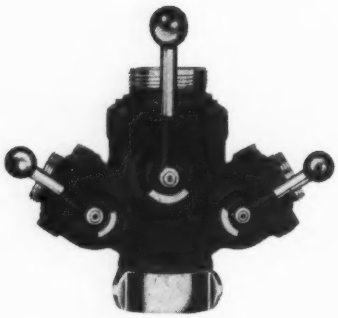

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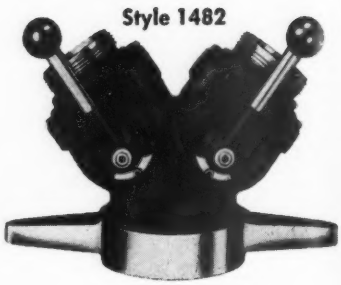

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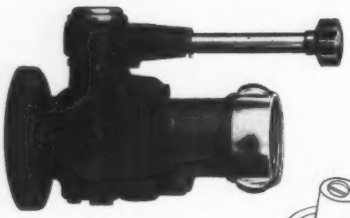

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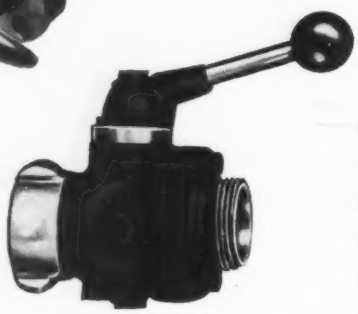


Style 825

LEARN ONE VALVE AND SERVICE THEM ALL!

PARTS INTERCHANGEABLE WITHIN SAME SIZE RANGE.

"Plumbers" valves can't match these features. You pay for top performance . . . demand it!

AKRON

UNI-VALVES®

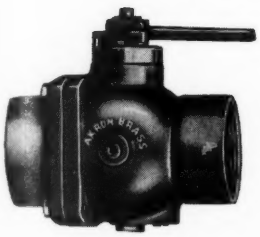
- Hold 1000 lbs. pressure in either direction
- Operate freely at 500 lbs.
- Hold pressure or vacuum in either direction
- All balls are fixed, no floating balls
- Adjustable seats for long service
- Bolted construction for durability, easy servicing
- Simple servicing. Every valve in the series is made exactly the same way. Learn to service one and you can service them all!
- Interchangeable parts. Should you ever need service or parts, one set of spares handles all valves or wyes in each size.

AKRON BRASS
FIRE FIGHTING EQUIPMENT

AKRON BRASS MFG. COMPANY, INC.
WOOSTER, OHIO
AKRON MFG. (CANADA), LTD.
AYLMER, ONTARIO

To be sure you get Uni-Valves on your fire truck, make sure you include the following in your specifications.

"All ball valves on the truck, whether in-line, line, discharge, suction or gated wye, shall be constructed so that all parts are interchangeable within the same size range. All valves, regardless of size, shall be of the same construction. They shall hold vacuum or pressure in either direction, shall be of bolted flange construction and shall have a fixed ball with one adjustable seat. Maximum working pressure shall be not less than 500 lbs. Valve shall be capable of withstanding 1000 lbs. static pressure."



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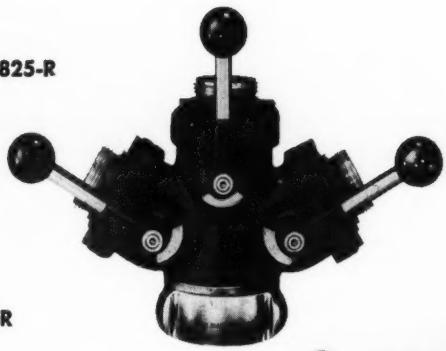

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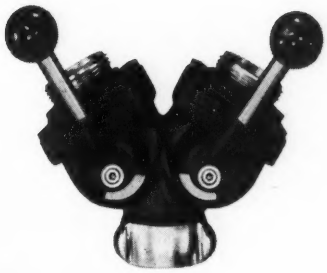

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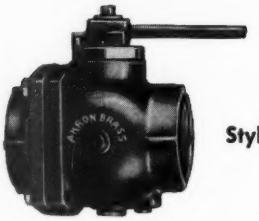

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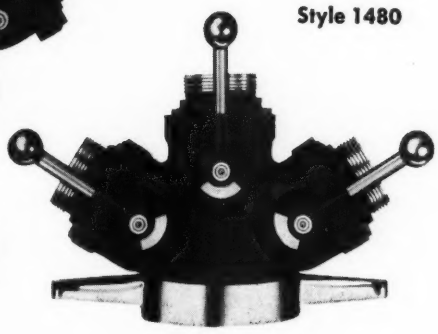

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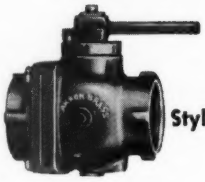

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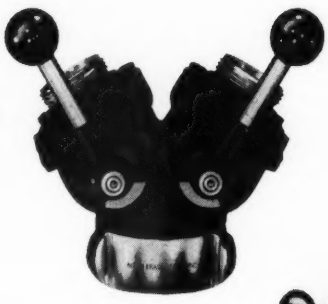

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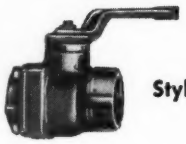

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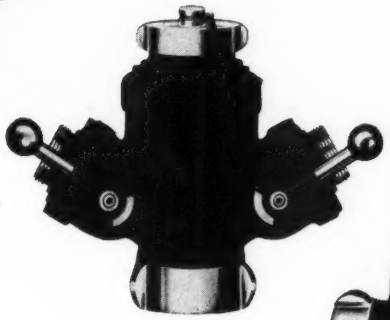

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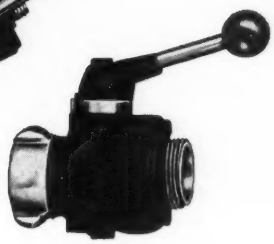

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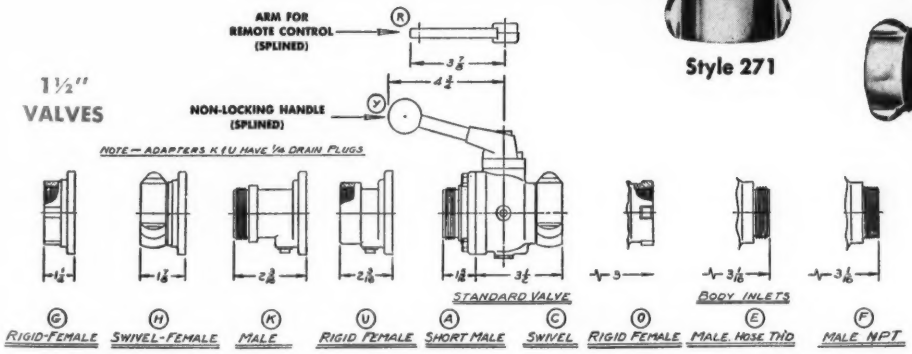
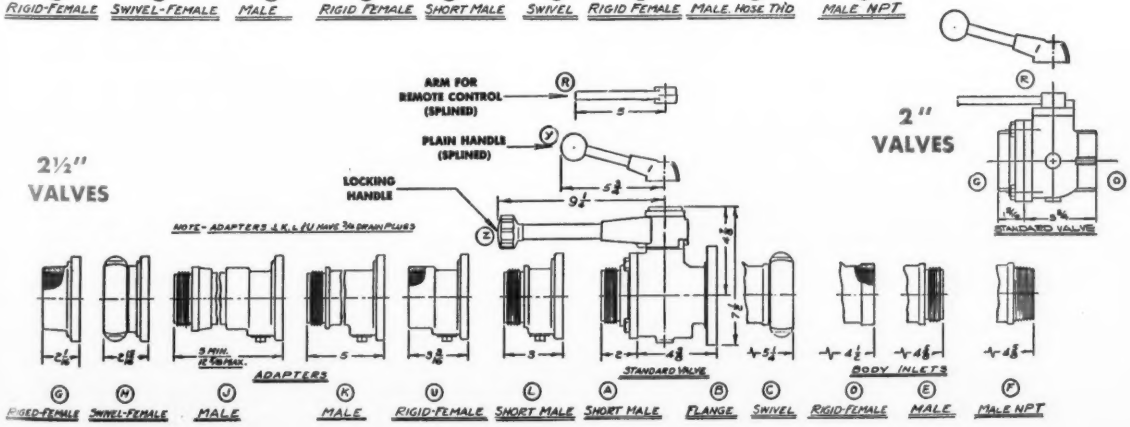




New IMPERIAL®

MASTER STREAM FOG NOZZLE

See New Akron Brass Catalog 60—Page 6

We call it the

BLACK WIDOW

Why? Because it's black; it's a catchy name you'll remember, and it's fast and deadly when used against the toughest fire.

500 GPM - 1000 GPM - 2500 GPM

SPECIFICATIONS

STYLE	GALLONAGE		BASE THREAD	LENGTH	WEIGHT	PRICE
	U.S.	IMPERIAL				
1145	500	417	2½"	6⅞"	5¼ lbs.	$125
1147	1000	833	2½"	7¾"	7¾ lbs.	$175
1148	2500	2083	Optional	9¾"	11¾ lbs.	$500

CONSTANT GALLONAGE—INCREASED REACH

Delivers its full capacity, 500 — 1000 — 2500 GPM, in all streams. Greater volume of full capacity streams results in fog and straight streams of far greater reach and density.

ENDS PRESSURE "SURGE"

Constant gallonage means no varying nozzle pressure.

TURNS EASIEST OF ANY NOZZLE MADE

CLICK POSITIVE STREAM POSITIONING

Holds any position without requiring a locking device. Fingertip control at any pressure.

ONE THIRD THE WEIGHT—TWICE THE STRENGTH

No corrosion. Made of Pyrolite metal—the new rocket-age material. Lustrous black surface is so hard that even a file can't scratch it!

ENDS WATER HAMMER

We have eliminated the shut-off to end water hammer that can damage your pump and hose. Control water where control belongs, at the pump.

AKRON BRASS
FIRE FIGHTING EQUIPMENT

AKRON BRASS MFG. COMPANY, INC.
WOOSTER, OHIO
AKRON MFG. (CANADA), LTD.
AYLMER, ONTARIO

NEW AKRON BRASS CATALOG 60 IS READY NOW . . . Ask for it!

NEW

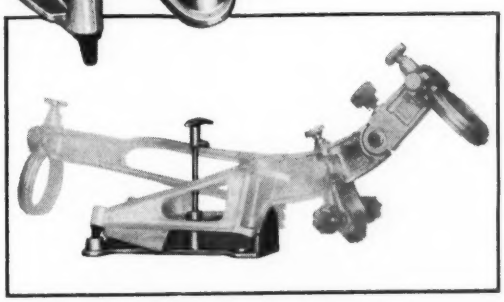
AKRON BRASS "TROJAN"

HOSE HOLDER

NOW! A hose holder you can put on a charged line!

Knurled handle for easy adjustment
Shown with Imperial "Black Widow" Master Stream Nozzle
Heat-treated Akrolite body
Legs fold against body

See New Akron Brass Catalog 60—Page 34



Compact Mounting Fixture

Goes on hose quickly

No need to shut down, can be attached to any charged 2½" or 3" line.

ADJUSTABLE for stream direction.

Compact, light-weight!

Made of tough, heat - treated Akrolite. Legs fold against body for easy storage. Weighs 14 lbs. Fixture for compact truck mounting.

Won't creep or crawl

Hose thrust anchors holder to ground. Hardened steel spikes dig in for safety.

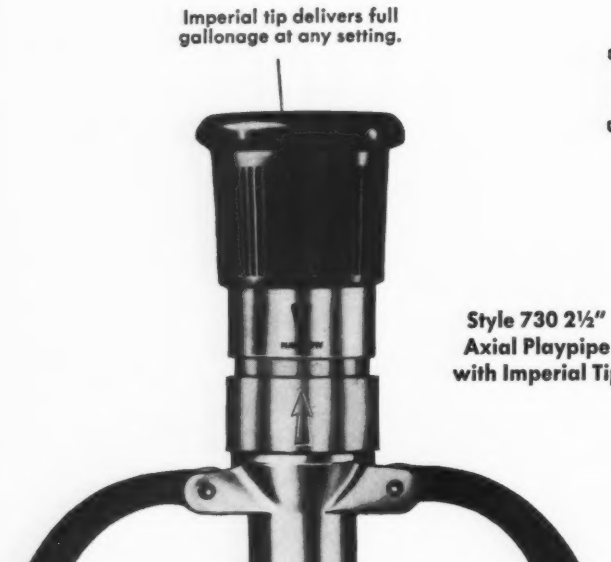
Saves manpower, saves lives

Set it, walk away, your hazard is covered.

AKRON BRASS
FIRE FIGHTING EQUIPMENT

AKRON BRASS MFG. COMPANY, INC.
WOOSTER, OHIO
AKRON MFG. (CANADA), LTD.
AYLMER, ONTARIO

NEW IMPERIAL® AXIAL PLAYPIPE


Imperial tip delivers full gallonage at any setting.
Style 730 2½" Axial Playpipe with Imperial Tip
Spring steel handles deeply embedded in rubber.
Swiveling base, controls always on top. No kink in hose.

See New Akron Brass Catalog 60—Page 26

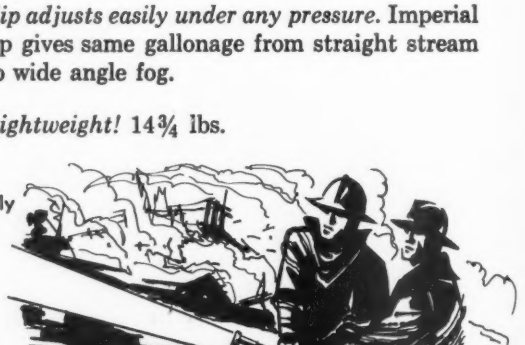
Compact. Perfectly balanced, shut-off in the center, not on top. 15⅜" long.

Full swiveling base keeps hose straight. Controls are always on top where they're easy to see and handle.

Spring steel handles, deeply embedded in rubber, anchored securely to playpipe body. Cannot pull off. Added safety. Comfortable grip.

Tip adjusts easily under any pressure. Imperial tip gives same gallonage from straight stream to wide angle fog.

Lightweight! 14¾ lbs.



2 Nozzles in 1

If you want to go forward with 1½" line, shut off, take off tip, add 1½" line to playpipe. Quarter-turn baffle tip and presto — your 2½" nozzle becomes a 1½" nozzle.

AKRON BRASS
FIRE FIGHTING EQUIPMENT

AKRON BRASS MFG. COMPANY, INC.
WOOSTER, OHIO
AKRON MFG. (CANADA), LTD.
AYLMER, ONTARIO

AKRON'S TOUGHER
FORGED COUPLINGS

Tapered hose bowl grips like a vise!

The hose will blow before the coupling will go!

Drop-forged under the tremendous force of hydraulic presses, Akron Rocker-Ring and Forgex couplings give you greater density, strength and toughness . . . the trouble-free service you're looking for.

Two models for you: the lightweight, three-lug Forgex, and the heavy-duty two-lug Rocker-Ring ...both guaranteed to give you complete satisfaction.

- Brass—reinforced with manganese—drop-forged
- Rocker-Ring for added protection to threads and swivel—for added strength in the hose bowls
- Tapered hose bowl holds hose in vise-like grip—no slipping at any pressure
- High pressure—the hose will blow before the coupling will go
- Threads—any 2½" and 1½" threads
- Hose—fit all fire hose
- Higbee thread and indicators
- Underwriter's listed

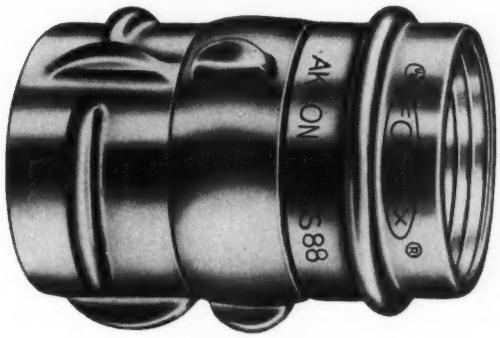
STYLE 88 — FORGEX® ROCKER-RING 3-Lug Coupling. Forgex comes in the smaller hose bowl sizes, perfectly tailored for the new lightweight hoses. A lightweight, tough, three-lug, drop-forged coupling for use on all 1½" or 2½" fire hose—dacron or cotton—any thread. Satin finish. Brass with manganese.

STYLE 92 — ROCKER-RING® 2-Lug Coupling. The heavy-duty drop-forged coupling for departments that want the best where service is the toughest. Satin finish. Brass with manganese.

Style	Size	Rockerlugs	Length	Weight Lbs.
88	1½"	3	4½"	2⅜
88	2½"	3	5⅜"	4½
92	1½"	2	4½"	2¾
92	2½"	2	5¾"	6⅛

See New Akron Brass Catalog 60—Page 62

FORGEX®



Style 88

ROCKER-RING®

Style 92

AKRON BRASS
FIRE FIGHTING EQUIPMENT

AKRON BRASS MFG. COMPANY, INC.
WOOSTER, OHIO
AKRON MFG. (CANADA), LTD.
AYLMER, ONTARIO

SPECIFY AKRON BRASS—FOR BETTER FIRE FIGHTING EQUIPMENT

IMPERIAL® FOG NOZZLES

Check these exclusive features...

Impinging, high-velocity center cone jets give dense, far-reaching fog

Circumference teeth "chew" stream even more thoroughly into fine particle fog

Resilient rubber bumper protects against damage, gives no-slip grip

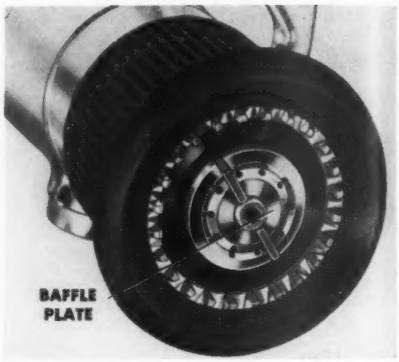
Akron quality ball shut-off

"Click" Positive stream positioning by feel or sight

Adjustable through all angles of fog

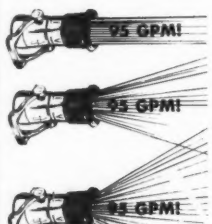
Swiveling "Rocker Lug" base — handle is always on top†
†Or Solid Base

See New Akron Brass Catalog 60—Page 2, 3



TWO GALLONAGES ONLY . . . no chance for confusion. Simple baffle plate adjustment gives either one.

CONSTANT GALLONAGE



The Imperial delivers the same gallonage in straight stream, narrow and wide fogs. This means no fluctuating pump pressure, no varying nozzle and back pressures.

AKRON BRASS
FIRE FIGHTING EQUIPMENT

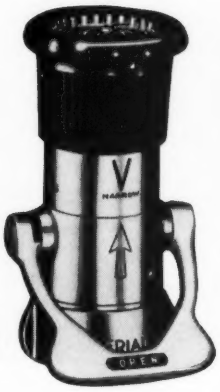
AKRON BRASS MFG. COMPANY, INC.
WOOSTER, OHIO
AKRON MFG. (CANADA), LTD.
AYLMER, ONTARIO

Style	Size	Gallonage U.S.	Gallonage Imperial	Length	Weight Lbs.
710	¾"-1"	23	19	5¼"	2¾
709	¾"-1"	23	19	10"	3¾
708	¾"-1"	23	19	10⅞"	4½
715	1½"	95-60	80-50	6"	4¾
715R	1½"	95-60	80-50	5½"	4¼
725	2½" Direct Connection	240-120	200-100	8"	9
725R	2½" Direct Connection	240-120	200-100	7¾"	8¾
729	2½" for Play Pipe	240-120	200-100	7⅛"	7
729R	2½" for Play Pipe	240-120	200-100	7⅛"	6¾

Style	Size	Gallonage U.S.	Gallonage Imperial	Length	Weight Lbs.	Threads Base	Threads Tip
716	1½"	95-60	80-50	7¼"	5	1½"	1½"
726	2½"	240-120	200-100	9¾"	10⅛	2½"	1½"
728	2½"	240-120	200-100	8¾"	7⅞	1½" NST or Any 1½"	1½"
730	2½"	240-120	200-100	15⅛"	14¾	2½"	1½"

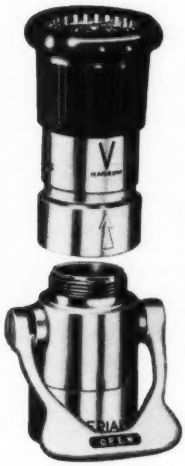
IMPERIAL® *the finest nozzle ever made*

Style 725, 725-R
Imperial
2½"

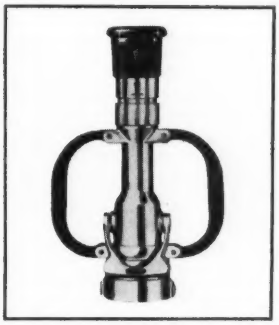


Style 715, 715-R
Imperial
1½"

Style 710
Imperial
¾" - 1"



Style 716, 726, 728
Imperial
Break-Aparts
1½" and 2½"



Imperial Tips
for Imperial
Axial Playpipes

CONSTANT GALLONAGE
GPM is always the same, no matter what the setting. Straight stream, narrow or wide fog—there's no fluctuating pump pressure, no varying back pressure.

DUAL GALLONAGE
In *one* nozzle you get *two* gallonages. How? You can do it easily with the Imperial. In the 1½" size you can change from 95 GPM to 60 GPM, in the 2½" size you can change from 240 GPM to 120 GPM. All you do is depress and half-turn the baffle. Conserves water, reduces water damage, gives you the versatility of *two* nozzles at the end of your line *without shutting down.*

BEST FOG and STRAIGHT STREAM
of any fog nozzle. Impinging high-velocity center cone jets give a solid, far reaching fog. Full gallonage straight stream reaches farther with water gallonage at full-rated capacity of the nozzle.

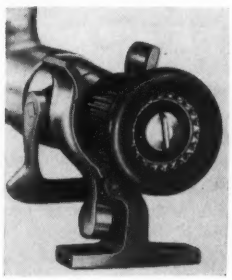
WATER LUBRICATED
Works easily at all pressures, *never* needs grease. Efficient ball shut-off is water lubricated.

SMALLER, LIGHTER, TOUGHER
The materials used in the IMPERIAL have been carefully engineered to reduce weight and size without sacrifice of strength or capacity. The result—one lighter, tougher, easier-to-use nozzle.

FOAM – FOG – WET WATER
First nozzle engineered with matching eductors for production of foam, wet water or fog in all degrees of pattern and straight stream . . . all without changing nozzles or shutting down. Produces foam or wet water at all settings.

Style 709 Imperial
Booster Line Nozzle
with Super Strainer

Style 708
Imperial
Pistol Grip
Booster Line
Nozzle with
Super Strainer



Style 40
Booster Nozzle
Holder

SPECIFY AKRON BRASS—FOR BETTER FIRE FIGHTING EQUIPMENT

For tough, quick-acting foam and wet water that cools, smothers, penetrates

UNOX®
PENETRANT FOAM LIQUID

UNOX
PENETRANT FOAM LIQUID
FOR CLASS "A" and CLASS "B" FIRES
WORKS EQUALLY WELL IN FRESH OR SALT WATER
FREEZE-PROOF TO -20° F.
AKRON BRASS MFG. CO., INC. · WOOSTER, OHIO
AKRON FOAM TEAM

Available in:
5 gallon cans
30 gallon cans
55 gallon drums

See New Akron Brass Catalog 60—Page 7

SMOTHERS AS A FOAM — excludes oxygen with blanket of small-bubble foam. Use on Class "A" or "B" fires. Foams with any water.

PENETRATES AS "WETTER WATER," unequalled as a penetrant of burning mattresses, cotton bales, charred wood and similar water-repellent Class "A" combustibles. Cools as it penetrates.

CONTROLLED RATE OF APPLICATION, ability to "pile-up" water in foam form excludes oxygen and smothers the fire. UNOX foam breaks down into "wetter water" penetrates, cools and extinguishes.

This controlled application reduces run-off and water damage, stretches water supplies, and assures fast extinguishment.

TANKER VOLUMES INCREASED — UNOX expands water 8-10 times. Increased volume plus penetration makes water last longer — less water needed — less water damage.

SMOKE ABATEMENT — reduced smoke, enables firemen to increase their fire fighting efficiency.

ECONOMICAL, UNOX goes a long way—1% for wet-water — 2% for foam.

SAFE TO USE, non-toxic. Requires no Clean-up.

UNOX WON'T FREEZE, or deteriorate. Stands temperatures to 20° F. Use with any water — fresh or salt.

LISTED BY UNDERWRITERS' LABORATORIES

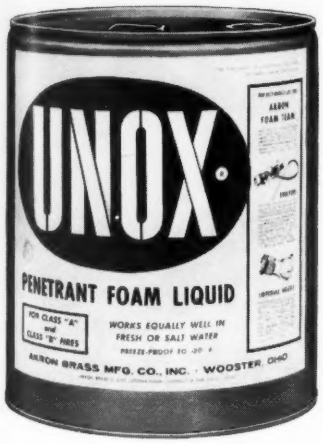
AKRON BRASS
FIRE FIGHTING EQUIPMENT

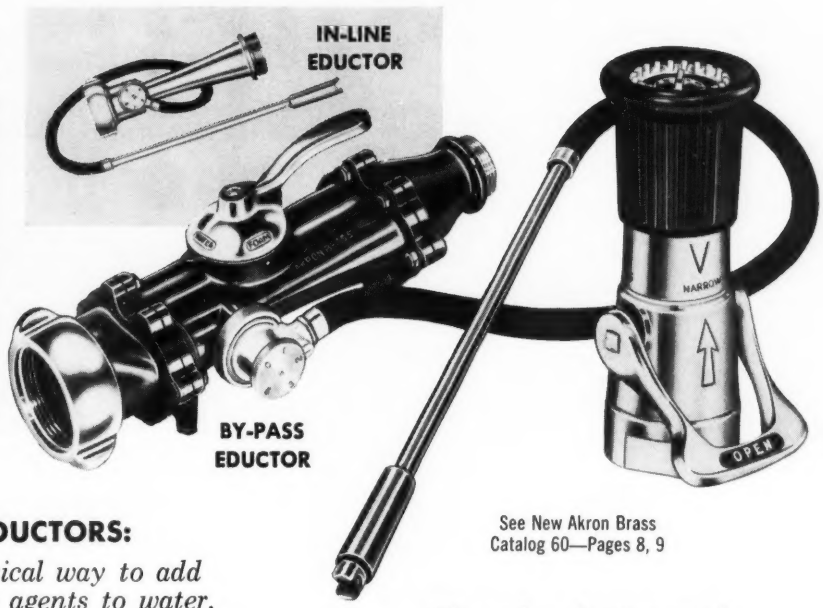
AKRON BRASS MFG. COMPANY, INC.
WOOSTER, OHIO
AKRON MFG. (CANADA), LTD.
AYLMER, ONTARIO

NEW AKRON BRASS CATALOG 60 IS READY NOW . . . Ask for it!

Use this system to **MODERNIZE WITH FOAM**

UNOX® + AKRON EDUCTOR + IMPERIAL®





See New Akron Brass Catalog 60—Pages 8, 9

AKRON EDUCTORS:

The simple, practical way to add Foam and wetting agents to water.

Attach to discharge gate or in the line. Foam or wetting agents never pass through the pump or booster tank.

All Akron Eductors give you these features:

METERING VALVE — calibrated — big, easy to see, easy to · set — positive stops.

CHECK VALVE — prevents flow-back of water into can or tank when nozzle is shut off.

NEOPRENE HOSE — flexible — spiral wire reinforced — monel finger strainer.

SAVES TANKS AND PUMPS — attached on discharge side of pump either in the line, on the discharge gate, built-in. Keeps wetting foaming agents out of tanks and pumps.

BALL-BEARING SWIVEL — permits proper positioning of eductor.

Two Types:

BY-PASS makes it possible to switch from plain water to foam without shutting down, breaking the line, adding an eductor, re-attaching the hose or changing nozzles. A quarter turn of the water-foam lever makes the change instantly!

IN LINE: Attach in line or at discharge gate for dependable, trouble-free pick-up of UNOX or DUBL-TUFF foam.

The only eductors made with matching nozzles
(see Imperial Nozzles, 2 pages forward)

IN-LINE EDUCTORS

Style	Inlet	Out-let	Gallonage U.S.	Gallonage Imp.	Length	Weight Lbs.
2230	1"	1"	23	19	7⅝"	5½ .
2600	2½" or 1½"	1½"	60	50	9¾"	1½"x1½" = 2½"x1½" = 8½
2950	2½" or 1½"	1½"	95	80	10½"	1½"x1½" = 2½"x1½" = 8½
2120	2½"	2½"	120	100	12⅞"	12
2240	2½"	2½"	240	200	12⅞"	14

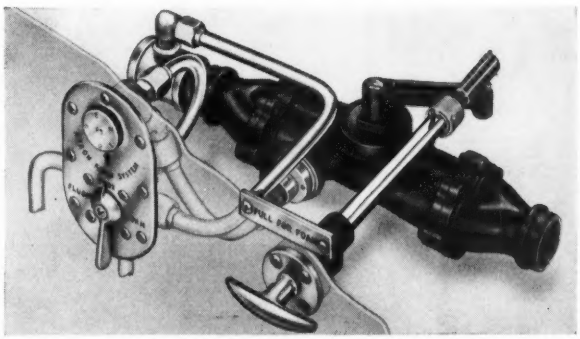
Fixed eductor (any percentage) may be specified.

BY-PASS EDUCTORS

Style	Inlet	Outlet	Gallonage U.S.	Gallonage Imp.	Length	Weight Lbs.
2608	2½" or 1½"	1½"	60	50	16"	21
2958	2½" or 1½"	1½"	95	80	16"	21

BEHIND THE PANEL TRUCK INSTALLATIONS

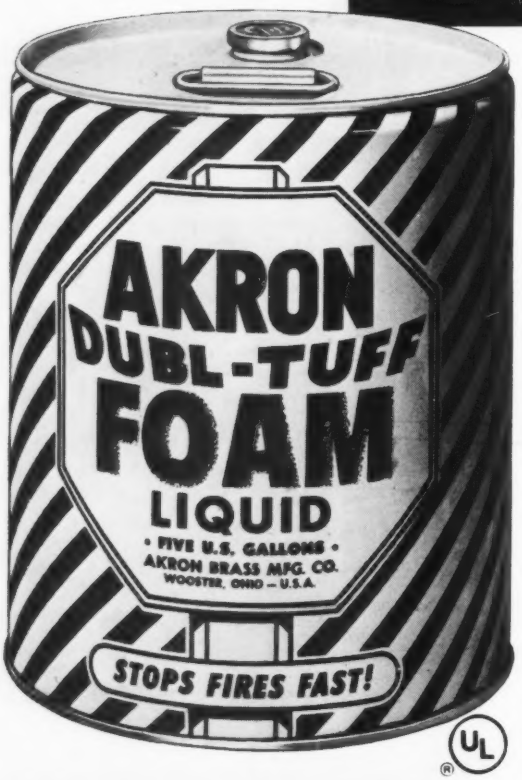
The By-Pass Eductor is part of the perfect built-in system for a pumper. Installed on the discharge side of the pump — wetting and foaming agents are kept out of the pump. Damage to tanks, pumps, packings, etc. is impossible. Always ready for instant use — for foam, set the Metering Valve on the desired percentage, set the Selector Valve on either "UNOX" or "FOAM" and pull the "PULL FOR FOAM" handle. For cleaning the system, set on "FLUSH" position and pull the "PULL FOR FOAM" handle.



SPECIFY AKRON BRASS—FOR BETTER FIRE FIGHTING EQUIPMENT

Produces smaller, tougher bubbles — spreads over fires quicker!

AKRON DUBL-TUFF FOAM



Use with Akron In-Line or By-Pass Eductors, and DUBL-TUFF aspirating Foam Nozzles.

PERSISTENT long-lasting foam.

FLUID AND FREE FLOWING

SMALL BUBBLES for high water retention, maximum cooling, and greater resistance to fire.

COHESIVE mass of small air-filled bubbles sticks to all surfaces — horizontal or vertical.

INSULATES by forming a thick fire-resistant coating on all surfaces.

Available in 3% (double strength) and 6%.

Container	Strength	Weight Lbs.
5 Gal. Can	3%	52
55 Gal. Drum	3%	578
5 Gal. Can	6%	52
55 Gal. Drum	6%	578

6% solution meets joint Army-Navy specification JAN-C-266.

AKRON BRASS
FIRE FIGHTING EQUIPMENT

Use with Akron In-Line or By-Pass Eductors, and Dubl-Tuff aspirating Foam Nozzles.

GUARANTEED

Guaranteed by Akron to be the finest foam available. DUBL-TUFF has extinguished flammable liquid fires where others have failed.

AKRON BRASS MFG. COMPANY, INC.
WOOSTER, OHIO
AKRON MFG. (CANADA), LTD.
AYLMER, ONTARIO

See New Akron Brass Catalog 60—Pages 12, 13

ASK FOR YOUR COPY OF THE NEW AKRON BRASS CATALOG 60

MODERNIZE with a DUBL-TUFF PROTEIN FOAM TEAM

DUBL-TUFF FOAM + AKRON EDUCTOR + FOAM NOZZLES

Engineered and designed together to assure proper performance always.

DUBL-TUFF®
FOAM NOZZLES

GREATER REACH—No obstruction in waterway to increase friction loss and lower pressure.

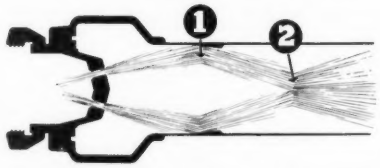
STRAINER AND LARGE JETS assure proper nozzle operation even under adverse conditions.

HIGH EXPANSION:

- **10 to 1 with Akron Dubl-Tuff Foam**
- **17 to 1 with UNOX Penetrant Foam**

STURDY — LIGHTWEIGHT
Polished Brass or Chrome Plate Trim. Red Marlin Cord wrapped body. Swivel base. Protective bumper. Two sizes — 1½" and 2½". Two types — with pick-up tube and without pick-up tube.

Conforms with Spec. MIL-N-12279A



DOUBLE-BOUNCE JETS for greater expansion — better foam.

TYPE 1 — WITH PICK-UP TUBE
Picks up foam liquid from can at nozzle.

TYPE 2 — WITHOUT PICK-UP TUBE
Used with By-Pass or In-Line Eductor.

TYPE 3 — WITH IMPERIAL NOZZLES
Used with Imperial Fog Nozzle or Imperial Fog Tip to produce superior foam.

Style	Size	Type	Water Rate U.S.	Water Rate Imp.	Length	Weight Lbs.
3601	1½"	Pick-Up Tube	60	50	36¼"	12½
3602	1½"	No Pick-Up Tube	60	50	36¼"	11
3120	2½"	No Pick-Up Tube	120	100	41"	16
3121	2½"	Pick-Up Tube	120	100	41"	18

Fast!
Positive!
Accurate!

OIL-DRAULIC EXPANDER

STYLE 80 OIL-DRAULIC POWER EXPANDER

A new power expander for attaching ¾" to 6" expansion ring couplings. Built for heavy and continuous use. Operates by oil pressure, not water pressure. The constant lubrication of all working parts reduces wear and tear, eliminates corrosion, resulting in years of trouble free service and complete satisfaction for every user.

The only expander with *two operating units* . . . segments of two different sizes can be left on the expander . . . cutting in half the time normally spent changing segments. Various combinations may be used . . . same size segments on both sides, different size segments, or segments on one side with the hose testing attachment, or the ring extractor on the other.

FAST — Set relief valve to pressure shown on chart . . . set hose spacer . . . and step on foot pedal. No guess work. Expansion cycle completed in less than half the time . . . accurately, positively . . . every time.

Style 80
Power Expander

See New Akron Brass Catalog 60—Page 58

Expansion Unit
Style 80-S

Hydrostatic
Hose Tester
Style 80-T

AKRON BRASS
FIRE FIGHTING EQUIPMENT

AKRON BRASS MFG. COMPANY, INC.
WOOSTER, OHIO
AKRON MFG. (CANADA), LTD.
AYLMER, ONTARIO

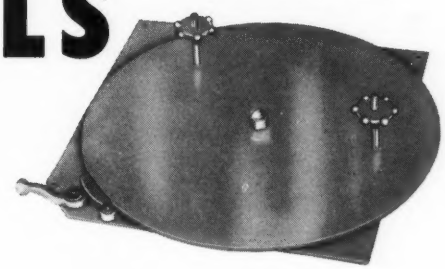
SPECIFY AKRON BRASS—FOR BETTER FIRE FIGHTING EQUIPMENT

From New York to San Francisco, from New Orleans to Toronto — new truck orders specify

AKRON BRASS MULTIVERSALS

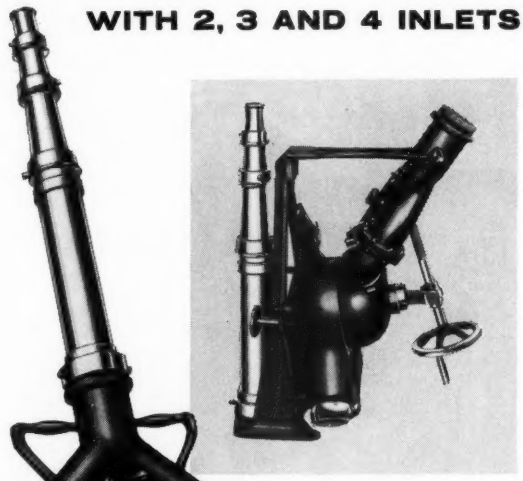
WITH 2, 3 AND 4 INLETS

Style 504
Top Mounting Fixture



New York City specified Akron 501-MT Multiversals and Akron ladder pipes on 100 recently purchased Mack fire trucks. On San Francisco's new La France trucks, Akron 501 MT's were specified . . . and so on across the continent.

Compact, lightweight Akron Multiversals are worm gear operated from 85° to 15° below horizontal. They lock in place automatically, need no further attention. Specially designed ground fixture grips any surface firmly—stays put—will not creep or crawl. Complete 360 degree rotation. 25° Safety Stop eliminates possibility of going beyond this lowest point of safety. Operation to 15° below horizontal from top mount.



Running Board Mounting Fixtures for 2, 3 and 4 Inlet Multiversals
Style 503
Style 503A

Style 501-MT
3-Inlet

Style 500-MT
4-Inlet

Style 491
2-Inlet

See New Akron Brass Catalog 60—Pages 34, 35

Style	Wt. Lbs.	Hgt.	Stacked Tips	Threads: Inlets	Threads: Discharge Pipe	Threads: Base Tip	Threads: Middle Tip	Threads: Top Tip
491	55	42"	1¼", 1½", 1¾"	2½"	2½" NST	2½" NST	Underwriters'	1½" NST

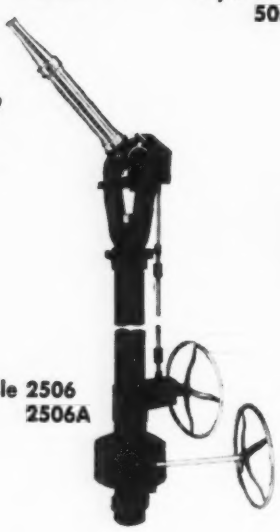
Style	No. of Inlets	Wt. Lbs.	Hgt.	Stacked Tips	Inlets	Threads: Discharge Pipe	Threads: Base Tip	Threads: Middle Tip	Threads: Top Tip
501-MT	3	78	51½"	1½", 1¾", 2"	2½"	3½" SIPT	2½" NST	2" Chicago Hose	Underwriters'
500-MT	4	80	52"	"	"	"	"	"	"

Style	Length	Width	Height	Weight Lbs.	Material	Finish
503	27"	16¼"	16"	27½	Malleable Iron	Red
503A	27"	16¼"	17"	28	Malleable Iron	Red

AKRON BRASS
FIRE FIGHTING EQUIPMENT

AKRON BRASS MFG. COMPANY, INC.
WOOSTER, OHIO
AKRON MFG. (CANADA), LTD.
AYLMER, ONTARIO

Style 505
505A



AKRON BRASS
FIRE FIGHTING EQUIPMENT

DECK PIPES

or Monitor Nozzles

Akron has the *complete* line, every size, every style, for every purpose — 200 to 6000 GPM.

Designed for one-man control of high gallonage streams under high pressure. Large waterways are hydraulically designed to produce high gallonage streams with the minimum of friction loss.

Complete elevation range, stream shapers in discharge pipe. Used on fire apparatus, or permanently mounted for protection of refineries, chemical plants, lumber yards, etc.

See New Akron Brass Catalog 60—Pages 38, 39

Style	Max. Cap'y GPM	Adjusting Control	Waterway		Recommended Tips Choice of One	Optional Tips	Inlet	Threads	
			Elbows	Discharge Pipe				Siamese	Tip Base
502	600	Handle	2"	2½"	1¼", 1⅜"	1⅛", 1½"	2½" or 3" TIPT Rigid Female or ASA Flange	2½" NST	2½" NST
509	600	Hand Wheel	2"	2½"	1¼", 1⅜"	1⅛", 1½"	" " "	2½" NST	2½" NST
507	1100	None	2½"	2½"	1½", 1¾", 2"	1⅛", 1¼", 1⅜"	2½" to 4" TIPT Rigid Female or ASA Flange	2½" NST	2½" NST
507A	2000	None	2½"	3"	2", 2¼", 2½"	1½", 1¾"	" " "	3½" SIPT	3" SIPT
508	1100	Handle	2½"	2½"	1½", 1¾", 2"	1⅛", 1¼", 1⅜"	" " "	2½" NST	2½" NST
508A	2000	Handle	2½"	3"	2", 2¼", 2½"	1½", 1¾"	" " "	3½" SIPT	3" SIPT

Style	Max. Cap'y GPM	Adjusting Control	Waterway		Recommended Tips Choice of One	Optional Tips	Inlet	Threads	
			Elbows	Discharge Pipe				Siamese	Tip Base
505	1100	Hand Wheel	2½"	2½"	1½", 1¾", 2"	1⅛", 1¼", 1⅜"	2½" to 4" TIPT Rigid Female or ASA Flange	2½" NST	2½" NST
505A	2000	Hand Wheel	2½"	3"	2", 2¼", 2½"	1½", 1¾"	" " "	3½" SIPT	3" SIPT
506	1100	2 Hand Wheels	2½"	2½"	1½", 1¾", 2"	1⅛", 1¼", 1⅜"	" " "	2½" NST	2½" NST
506A	2000	2 Hand Wheels	2½"	3"	2", 2¼", 2½"	1½", 1¾"	" " "	3½" SIPT	3" SIPT
2506	1100	2 Remote Hand Wheels	2½"	2½"	1½", 1¾", 2"	1⅛", 1¼", 1⅜"	4" TIPT Rigid Female	2½" NST	2½" NST
2506A	2000	"	2½"	3"	2", 2¼", 2½"	1½", 1¾"	"	3½" SIPT	3" SIPT

2000 to 6000 GPM Deck Pipes available upon request. Write for particulars—giving details.

SPECIFY AKRON BRASS—FOR BETTER FIRE FIGHTING EQUIPMENT

Jim Johnson, the Fire and Rescue Service chief, operates the heavy winch on squad vehicle at a Chicago fire. Winches have been used to pull buildings apart or to drag combustibles from burning buildings

The Chicago Fire and Rescue Service operates six fully equipped, heavy-duty vehicles. These are stationed at strategic locations throughout the city. The station wagon is used by the chief of the service

Fire and rescue vehicles are equipped with two-way radio operation on the regular fire frequencies. Portable radios operated by personnel at a fire scene permit the vehicles to serve as communications centers—*All photos coutesy Motorola Inc.*

Buffs Operate CD Fire and Rescue Service

"IT'S A WORKING UNIT," says Fire Commissioner Robert J. Quinn, when describing the Chicago Civil Defense Fire and Rescue Service, of 455 North Walcott Avenue. Quinn put the accent on "working." The record certainly bears this out. The Civil Defense Fire and Rescue Service went into action on January 1, 1958. In its first year it responded to 203 extra-alarm fire calls and 199 special-duty calls for an average of more than one a day.

The Chicago Fire and Rescue got its birth with a conference between Quinn and Charles "Jim" Johnson, a most ardent fire buff. Quinn knew that the city's civil defense organization owned six heavy-duty rescue trucks that were standing idle in various city garages. With the blessing of Mayor Richard Daley, he asked Johnson whether he and other fire buffs would be interested in forming an organization that could take over the unused vehicles. Johnson took it from there and formed a squad that now numbers 80 men.

The unit meets twice a week—three hours each Tuesday evening for classroom training and five hours on Saturdays for drill and equipment maintenance. The fire department provides skilled instructors to train the members in rescue operations, while the Red Cross provides first-aid training. Each man is required to pass stiff examinations on all skills involved. This training has paid off in that the Fire and Rescue Service is able to stand by at extra-alarm fires to perform all types of nonhazardous tasks for the fire department as well as take on special-duty calls.

Winches part of equipment

At several fires during 1958, the Fire and Rescue Service used the heavy winches on its trucks to pull buildings apart to aid firemen in extinguishing the blaze. In a warehouse fire it used the winches to pull out bales of combustible material. At an Evanston fire, the winches were employed to drag a hook and ladder out of axle-deep mud. The men practice with the winches, reports Johnson, and have become highly efficient in their use. For training they have received permission to aid wrecking crews in the process of tearing down old buildings on proposed expressways routes.

Frequently the Fire and Rescue Service is called on to operate emergency lights and portable generators for the fire department. At one 5-11 fire, the power was shut off in the entire area. The civil defense portable generators were used to

Continued on page 772

Provide Positive Protection With a

By W. BEN FLANIGIN*

MORE THAN 2,000 communities, ranging from the country's largest to its smallest, now have the positive protection of fire alarm systems based on the coded telegraph principle. But what of thousands of others? Some are completely unprotected. Others live under the false security of inadequate facilities which all too often are responsible for deadly delays in reporting fires that spell disaster.

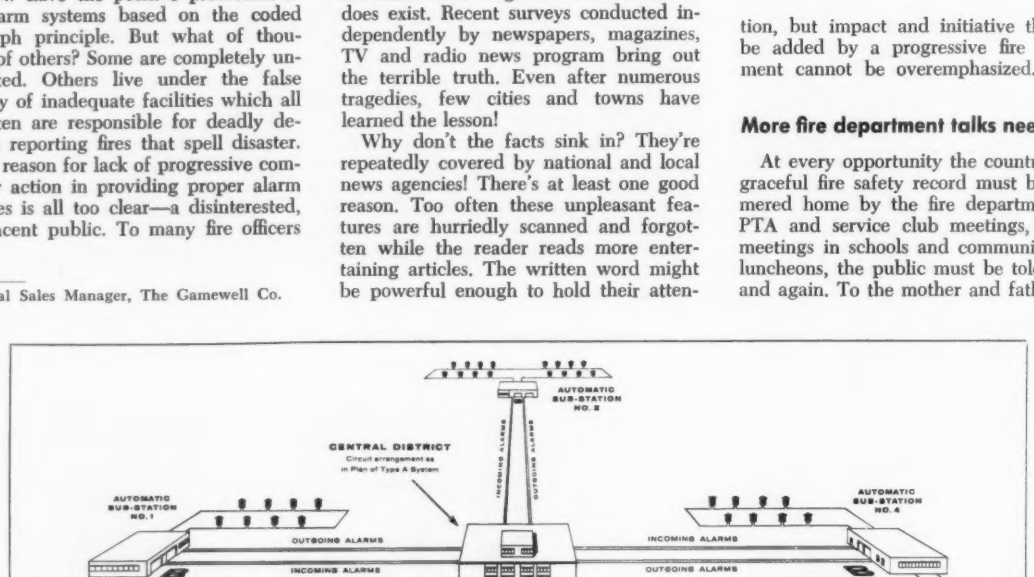
The reason for lack of progressive community action in providing proper alarm facilities is all too clear—a disinterested, complacent public. To many fire officers and safety officials this attitude seems almost unbelievable in the face of recurring fire disasters throughout the land. But it does exist. Recent surveys conducted independently by newspapers, magazines, TV and radio news program bring out the terrible truth. Even after numerous tragedies, few cities and towns have learned the lesson!

Why don't the facts sink in? They're repeatedly covered by national and local news agencies! There's at least one good reason. Too often these unpleasant features are hurriedly scanned and forgotten while the reader reads more entertaining articles. The written word might be powerful enough to hold their attention, but impact and initiative that can be added by a progressive fire department cannot be overemphasized.

More fire department talks needed

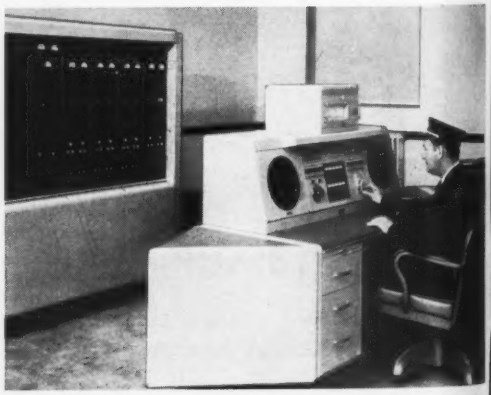
At every opportunity the country's disgraceful fire safety record must be hammered home by the fire department. At PTA and service club meetings, special meetings in schools and community club luncheons, the public must be told again and again. To the mother and father, the

* General Sales Manager, The Gamewell Co.



Schematic diagram of decentralized fire alarm system similar to that employed in Yonkers, N. Y.

Chief J. L. Rivard (left) and Mayor Bergeron, Willimantic, Conn., inspect street box installation. Variation of station and public alarm timing of this system helps prevent traffic congestion problems



Yonkers fire alarm headquarters is equipped with the latest type of central station equipment. In case of emergency affecting its operation, each individual substation can function as an independent unit

a Modern Coded Fire Alarm System

fire official has a purely humane, emotional argument. To fellow municipal authorities and businessmen he can present a factual argument dealing with dollars and cents as well as lives.

And he has plenty of ammunition: The 11 or 12,000 people who will die by fire this year—30 per cent of them children under 14; the $2,000 property loss that occurs each minute—800 homes a day, 45,000 mercantile buildings last year; the staggering total property loss by fire last year of $1,305,000,000. And he also has a golden opportunity to explain the growing need for connecting schools, hospitals, and public buildings into the municipal fire alarm system. How many of your citizens know, for example, that 65 per cent of today's school fires are reported by passersby?

In emphasizing the need for progressive community action in regard to fire alarm systems, fire chiefs can draw generously on several outstanding examples for illustration purposes.

New Yonkers system

Probably the most complete and most foolproof protection in any city today is that provided by the new decentralized coded fire alarm system in Yonkers, N. Y. This city of 152,798 is typical of areas which, during the past ten years, have shown the greatest population increase —with subsequent increased fire protection problems.

Its outlying sections have expanded much more rapidly than the city proper. Mercantile, industrial and shopping center construction, together with residential areas and semi-isolated dwellings have created high-value districts beyond the extremities of the previous existing fire communications. The decentralized fire alarm system has proved the most efficient and economical solution to this situation.

When completed this year, the new system in Yonkers will have 790 boxes, 264 having been added to the 526 in operation before decentralization took place. There are 39 circuits available as against the former 16, with six interconnected engine houses in the decentralized control network. Fire engine houses act as substations, while No. 12 engine house serves as fire alarm headquarters.

Each substation has a control panel with circuits for the boxes within its jurisdiction and alarm circuits back to headquarters. A box pulled on any substation circuit is automatically transmitted back to headquarters where its location as well as date, hour and minute of the alarm register on a master recorder. The operator at the master console then sets up the alarm and transmits it. Alarms can be general or selective at the discretion of the chief operator. Date and time of these outgoing transmissions are also registered on a master recorder.

Double protection

Each substation in the system has a multicircuit recorder which registers all boxes pulled on its box circuits. There are also tap bells for the circuits. To provide centralized control, response from the engine house follows directions from fire alarm headquarters. However, each substation can function as an independent unit and receive all the alarms in its area on the multicircuit recorder. In addition, it eliminates the unnecessary alerting of firemen not needed for a particular box alarm.

No interference

Substations in this advanced system cannot interfere with each other in any way. Single boxes can be struck simultaneously on all of the six substation circuits and each will record on its own fire alarm circuit at headquarters. Should two or more boxes be simultaneously pulled from the substation circuits, a noninterference and succession feature automatically takes over, giving sequence preference to alarms in order of boxes pulled.

Additional safeguards

Complete supervision of each substation system at all times is provided by an automatic restorer for all circuits. The restorer also acts as a trouble shooter by monitoring open circuits and giving periodic warning taps at headquarters to alert maintenance personnel.

Each engine house also has a primary and secondary alarm circuit to fire alarm headquarters with alarm devices on both circuits. And, in addition to the built-in emergency batteries, power continuity to the system is assured by an emergency gasoline generator.

Complete coverage

The new Yonkers system provides adequate curbline protection and will eventually include all public and parochial schools, connected into the system through master boxes located on school premises. Operated and maintained by

Continued on page 774

Chief Thomas P. Gorman, Quincy, Mass., looks over one of 10 new housing units for the aged. All will be equipped with automatic fire detectors and master box connection to municipal fire alarm system

Chief Richard M. Salamone, Needham, Mass., demonstrating operation of fire alarm box to school children. Proper educational program directed to all civic groups will help "sell" the fire department's story ▶

Santa's helpers—firemen at Dallas' No. 27 Station with a portion of the toys repaired, painted and given to kids from underprivileged families

Fire prevention exhibit at the Texas State Fair sponsored by the Dallas Fire Department. An average of 100,000 pieces of fire prevention literature have been distributed at similar exhibits for the past 12 years

"Fire House Rhythm Kings" make one of their four daily appearances from stage at the Agriculture Building at the State Fair of Texas

Public Relations—

SHORTLY after his appointment as chief of the Dallas Fire Department in 1945, Fire Chief C. N. Penn began an evaluation of the public relations program of the department. His analysis revealed many shortcomings. The first step taken to rectify these omissions was the appointment of a public relations officer. The fire marshal's office, by the very nature of its business, deals with the public more than any other branch of the department, and for this reason, the fire marshal was appointed to head the public relations activities.

Since no one man can efficiently handle a public relations program for an organization comprising several hundred men, the entire personnel of the fire department were asked to make suggestions which would aid in bettering relations with the citizens whom they serve, and every Dallas fireman was requested to serve as a member of the public relations team. In addition, one officer and one inspector who had been doing fire prevention educational work were appointed as public relations assistants. Since 1946, this office has grown until it now includes an officer, six inspectors detailed to full-time public relations activities and a stenographer-secretary to help handle the office records and correspondence, plus additional men as needed for special drives and activities. This group of public relations specialists report to, and are accountable directly to the fire marshal.

Year-round program

The fire marshal's office and men conduct a year-round campaign of fire prevention education, beginning with youngsters in kindergarten and carrying through the public and parochial schools, business and industrial groups, civic and service clubs, youth organizations and Parent Teachers Associations. The campaign is carried on by means of lectures, motion pictures and demonstrations. As an example, each of the 145 public schools was visited during the recent school term at least once, and a fire prevention assembly program was presented in the school before the student body. In addition, teachers include fire safety education in their regular curriculum at regular intervals throughout the year.

"BIG D" Style

By **HERSCHEL L. FUTCH,** *Chief*
Fire Prevention Education,
Public Relations and Publicity Office
Dallas Fire Department

"The Magic of Fire," a demonstration that captures the interest of every type of audience from children to adults. Here a PTA group learns about fire safety from Inspector F. F. Dunaway of the Dallas Fire Department

Practically every service club and civic organization witnesses one or more fire prevention programs each year. Business and industrial firms, especially the larger ones with large employee groups and high fire risks, are visited at frequent intervals. Fire safety demonstrations, including extinguishers and fire prevention suggestions, are made before groups of key employees.

Since only a limited percentage of the citizens can be reached through the aforementioned programs, radio and television are used to reach the housewives and others. All local radio stations are provided with fire safety and prevention "spot announcement" copy every four to six weeks and all use these spots at frequent intervals. Each of the three local television outlets has been most cooperative in helping to promote fire prevention. Sound-on-film fire safety spots are prepared and filmed by personnel in the fire prevention education and public relations office, as are slides and announcers' copy. This material is used regularly by the TV stations. In addition, one 13-week series of 15-minute television programs called "Know Your Fire Department" enabled thousands of citizens to learn about fire safety, fire prevention and the men and equipment of the department. Regular daily radio broadcasts of fire news were carried for many months and were discontinued only recently when the sponsoring radio station changed its program format.

Realizing that the success of any public relations program depends to a great extent on the relations between the press and the organization promoting the campaign, a special effort was made to cultivate and improve relations between the department and the men and women representing the various news media. All battalion chiefs and company officers are encouraged to cooperate to the fullest extent in helping reporters and photographers in getting the pictures and story material at incidents which involve fire department personnel. Three members of the public relations staff are on 24-hour call duty to major fires and special incidents and one of their primary responsibilities upon arrival is to aid the press representatives in securing story material and making certain that the material obtained is as factually correct as possible. As a result of these activities, both daily papers are most cooperative when they are approached with a story which the fire department wants to bring to the attention of local citizens.

One unique approach to the fire prevention problem used by the public relations office includes the daily mailing of personal letters to each new family moving into the City of Dallas, to each family occupying a newly built house, and to the owner of each new business establishment. These letters welcome the newcomers to the city, offer various informational services and appeal to the recipients to "practice fire safety and fire prevention measures." Occupants of new homes are congratulated on their new residences and urged to practice fire safety to protect their investment and their families. The letters to new businesses are similar in nature and all three include a pamphlet titled "Home Fires and You," in which many of the more common fire hazards are discussed and suggestions made as to how to remove them.

Dallas is the home of the State Fair of Texas, and this fair is open each year during Fire Prevention Week. The Dallas department has for the past 12 years during this event secured and decorated a booth on fire safety. With an annual attendance of over two million persons, the fair provides an opportunity for reaching many thousands of Texans with a message concerning fire prevention. In addition, exhibits are also set up at the annual Home Show and many other similar trade shows which play to local citizens.

Visits to stations welcomed

Fire stations are always open for visits by citizens, either singly or in sponsored groups. A week never passes by but that a Cub Scout pack, Boy Scouts or a class of school children do not visit the stations. Supplies of fire prevention literature are kept on hand for these visitors.

Through the cooperation of the training division, a series of three fire "thrill shows" were presented last summer to which the public was invited. Held at the drill tower and training center, these shows afforded the department an opportunity to demonstrate new equipment and the newest techniques in fire fight-

Continued on page 778

Civil Defense Pumpers Play Important Role in California Disaster Operations

CD reserve apparatus maintained on ready status to provide immediate assistance to any community in need

By CLIFF DEKTAR

CALIFORNIA fire officials are enthusiastic in their praise of the valuable use made of the state's 100 civil defense fire trucks. The triple combination engines were purchased in 1952 and 1953, and the apparatus has proved valuable as a reserve and backstop for the state's operating fire departments.

"Acquisition of this apparatus is one of the best bargains California's taxpayers ever received," commented one Southern California fire chief. "We now have a statewide well-equipped reserve for any type of fire emergency and an organization to get the equipment into action with minimum delay."

Forty-three rigs were purchased in 1952 and 57 the following year. Total cost of each pumper was $13,732.94, of which the Federal government paid $5,500 plus $300 for freight, in what was then known as the fire apparatus "matching fund" program.

They are currently assigned throughout the state with approximately equal numbers in northern and southern California.

Each has a 500-gallon tank with a 1,000-gpm pump and 285-hp motor. A unit carries 1,000 feet of 2½-inch and 400 feet of 1½-inch hose, 4-inch soft suction, 5-inch hard suction, ladders, portable generator and deluge gun, in addition to a varied selection of small equipment.

Each is painted red and is clearly numbered on the side and roof for easy aerial identification. Eighty of the units have been equipped with state frequency radios and the remainder will have installations completed next year. All apparatus is maintained and repaired in state prison shops. Despite high frequency of use, there have been only minor damages to date.

Harold P. Bowhay, chief of the California Disaster Office's Fire and Rescue Service, has been commended by fire executives throughout the state for his able administration of the fire equipment. Bowhay is normally assisted by three field representatives, all highly qualified and trained chiefs. George Taylor heads Region I, which takes in 12 southern California counties, and Melvin Reiley is stationed at Region III, California Disaster Office Headquarters at Sacramento. Reiley also assists Chief Bowhay. The position at Region II, Berkeley, is vacant at present.

The Disaster Office assigns the apparatus to municipal and county fire departments, fire districts, the State Division of Forestry, state institutions and five are stationed in the service's only pool at the California Institution for Men (minimum security prison) at Chino near Pomona. For example, CD 1 is assigned to the Modesto State Hospital, CD 47 to the San Anselmo Fire Department, CD 48 to Orange County Fire Department and CD 100 to the California Division of Foresty, Squaw Valley.

For use in emergencies

Agencies and departments accepting the equipment agree to dispatch the pumper with a minimum crew of two men to emergencies as needed under order of the area or regional fire chief. Many departments send larger crews. In turn, the agencies must house and maintain the apparatus. They may use it for mutual aid and greater alarms, but not for first-alarm fires. If a department's own apparatus is out of service temporarily, the state pumper may be used as a stand-by.

When the City of Santa Maria's fire station burned down in 1955 and that city's fire equipment was destroyed, Santa Barbara County—with the approval of the State Disaster Office—dispatched two CD pumpers to provide protection for Santa Maria until replacement apparatus could be procured.

Each of the three regions is headed by a fire chief and then each region is broken into sectors and subdivided into areas. For example, Region I chief is L. A. County's Keith E. Klinger. Chief Klinger is in charge of Sector A and other fire officials command the other three sectors. In Sector A there are eight areas, also in charge of various fire chiefs.

Each area chief can request movement of apparatus on mutual aid within his own area and clears with sector or regional commanders on outside areas. On the other hand, in an emergency, Disaster Office fire officials can request through sector and area commanders dispatch of the CD pumping equipment and also for regular equipment on mutual aid.

Value proven

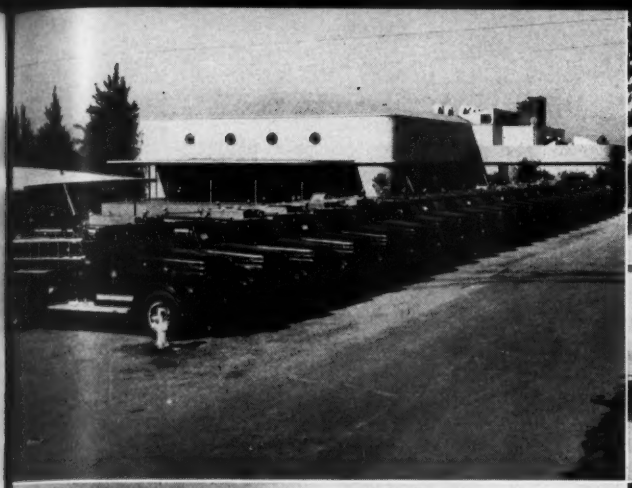
This system has paid enormous dividends since its inception, particularly on many of the large and severe brush fires occurring in California during recent years. Chief Bowhay reports that the pumpers responded on approximately 1,100 fires during 1956 and 1957 alone, in which they helped save approximately $2,500,000 worth of property. This does not include value of property and watershed saved on brush and forest fires.

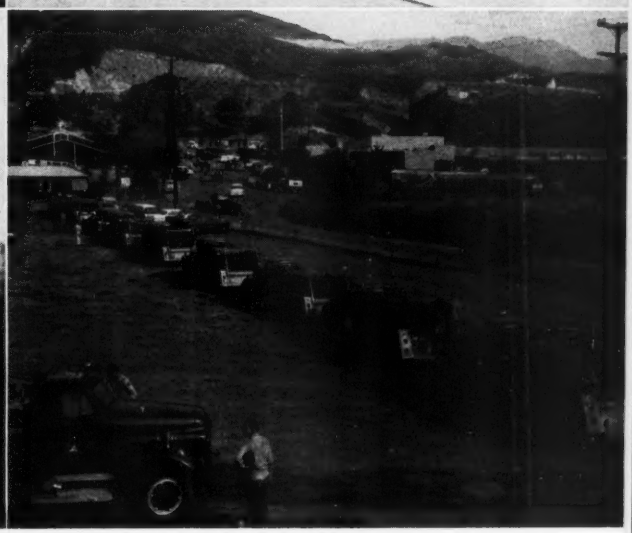
On the Lake Arrowhead Fire of 1957, CD pumpers were massed and credited with saving the community of Santa's Village, an estimated value of $1,250,000. In the two years, CD pumpers were logged with 6,000 hours on fires and about 2,000 hours in training auxiliary firemen. First large-scale use of equipment came late in 1953, when 21 pumpers responded to the Monrovia Peak blaze in Los Angeles County.

Some of the large forest fires that the CD rigs have worked on are Fish Fork, Angeles National Forest, 18 pumpers; McGee Fire, Sequoia National Forest, 10; Santa Barbara (Refugio), 23; McKinley Fire, San Bernardino National Forest, 43; Malibu Fire, 35; Snowline, El Dorado, 8.

Although the pumpers were not specifically designed for brush or forest fire use, they have proved extremely useful. Chief Bowhay reports that during bad brush fire seasons as many as 56 of the 100 rigs have been out on assignments at one time. Apparatus responding to Los Angeles area fires have come from as far away as Fresno, 200 miles distant.

Area fire chiefs are given much freedom in dispatch of equipment. For example, during the major brush fires in





Top, left:
Twenty-one of the CD pumpers lined up at California Institute for Men, Chino. Repair and painting of apparatus is done at the prison and a fire-rig pool maintained here

Above, left:
CD Pumper 23 in action at the Topanga Canyon Fire. This unit is assigned by the Disaster Office to the Division of Forestry at Perris
—L. A. County F. D. photo

Top, right:
CD Pumper 38 is assigned to the Los Angeles County Fire Department, whose chief, Keith E. Klinger, is civil defense chief of Region I and Sector A
—L. A. County F. D. photo

Above, right:
Contingent of CD reserve pumpers lined up outside Webster School fire camp awaiting assignment to fire lines during Malibu fires
—L. A. County F. D. photo

the Topanga Canyon and Benedict Canyon areas of Los Angeles this year, Chief William Haggard sent his own Ventura County equipment which was much better suited for the work, and filled empty houses with CD pumpers.

Radio equipped

In addition to the state radios on the apparatus, local departments may install their own sets with the approval of the State Disaster Office. The Disaster Office has a number of handie-talkies stockpiled at various locations available for use on major fires.

A versatile statewide radio system is in operation for the fire service. The system uses microwave and repeaters and will allow, for example, Chief Taylor in his car in southern California to talk directly to Chief Bowhay in Sacramento headquarters. In some areas where the network is not completed, the Division of Forestry radio supplements communications.

Base stations are located in the CDO control centers, state fire marshal offices, fire department alarm headquarters and state forestry dispatching centers. The two latter sites serve as day-to-day mutual aid and provide 24-hour, year-around dispatching service.

The system is a cross-channel one which can be used for base to base, base to mobile, mobile to base and mobile to mobile. Base and mobiles transmit on 33.98 mc to the relay where the signal is retransmitted on 153.77 mc.

Additional base stations are installed in mobile fire communications units and in the mobile communication centers of the CDO attack and warning divisions.

One of the five mobile communications units for the fire service is in operation and was used on several watershed fires last year. This unit will be stationed in southern California for the fire season. Four other units are to be completed by October 1. These trucks are former Army machine shop 4 x 4s, with 14 two-channel radio sets. Work on cabinets, etc., is being done by state prison labor. Each unit will tow a 7½-kw generator.

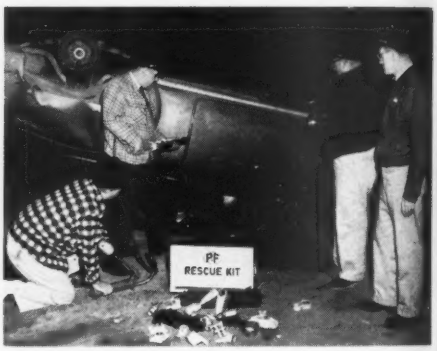
In addition, five former Army ambulance units are also under construction to be used with the mobile communications fire units as relays when needed. The Disaster Office fire service also has stockpiled throughout the state 100,000 feet of 6-inch aluminum pipe which can be quick-coupled. It is placed at key sites where transportation is available. The fire service also has 29 heavy rescue units. □□

Town of Greenwich fire patrol companies line up for review by town officials during recent annual inspection ceremony

Volunteers Provide Salvage and Rescue Service to Community

By JOSEPH W. TAMMANY

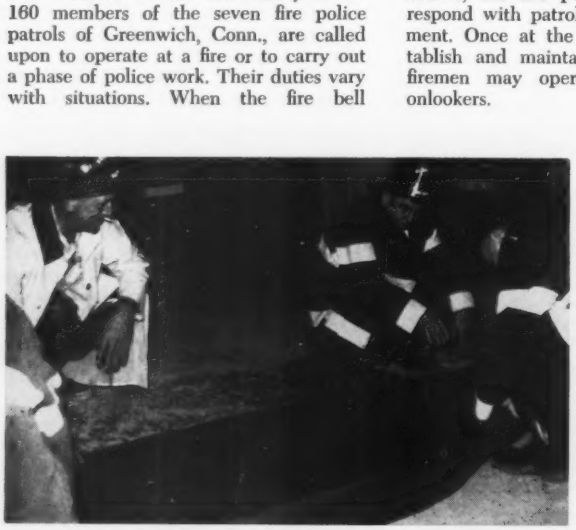
Public Relations, Greenwich Fire Police Association



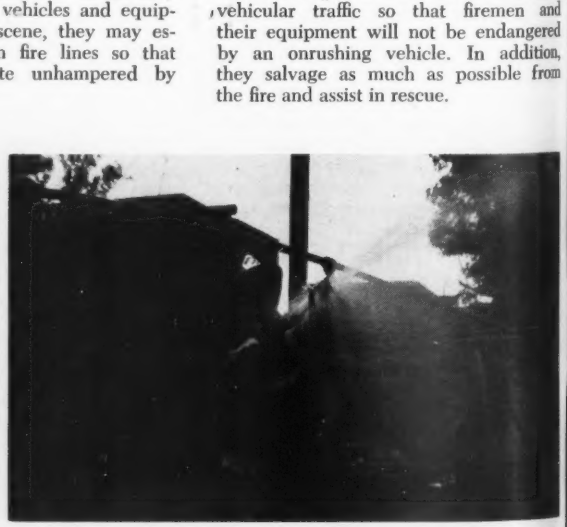
Fire patrol members practice use of hydraulic rescue kit for freeing motorist trapped in vehicle

HUNDREDS OF TIMES each year the 160 members of the seven fire police patrols of Greenwich, Conn., are called upon to operate at a fire or to carry out a phase of police work. Their duties vary with situations. When the fire bell sounds, the fire policemen immediately respond with patrol vehicles and equipment. Once at the scene, they may establish and maintain fire lines so that firemen may operate unhampered by onlookers.

The fire policemen must also control vehicular traffic so that firemen and their equipment will not be endangered by an onrushing vehicle. In addition, they salvage as much as possible from the fire and assist in rescue.



Greenwich patrolmen practice folding chute during drill session at New Haven Fire Training School



Patrolman practices shutting off individual sprinkler head. Stoppers and wedges are carried on all apparatus

Each fire police unit answers accident calls with its ambulance and a fire company ambulance. The fire policemen give first aid to the injured; keep the accident scene clear so the injured can be attended to and that rescue work, when necessary, can be carried out swiftly. They also assist the police at the emergency in any way possible. In fact, the police department can call on the members for any type of emergency duty, other than fires.

Extensive area covered

The fire police patrols presently in operation in Greenwich cover a total of 43 square miles of the town (population 51,000). The Greenwich Fire Police has 30 active members; Sound Beach Fire Patrol, Inc., in Old Greenwich, 25 active men and four associate members; Cos Cob Fire Police Patrol, Inc., 28 active, 26 associate; East Port Chester Volunteer Fire Patrol, 30 active and eight associate members. This last unit covers Byram. The Round Hill Volunteer Fire Police Patrol has eight active members; Banksville Fire Police, 24 active, and the recently organized Glenville Fire Police, 15 active. All members are resident volunteers over 21 years of age.

Each company elects its line officers —a captain and two lieutenants—who direct the activities of the unit independently of the volunteer fire company to which it is attached. At fires, however, the town fire chief or the chief of the fire company responding is in charge. Similarly, at an emergency under police jurisdiction, which is also answered by fire police patrols, the police are in charge.

Training stressed

To promote the efficiency of the patrols, the members are constantly given instruction in the three major fields of their responsibility—salvage, rescue and traffic.

Monthly meetings of the units feature a speaker who discusses one of these subjects with the members and demonstrates new and more efficient techniques and the latest equipment. Local, state and national law enforcement officers have appeared before the groups and explained various methods for handling vehicular and pedestrian traffic at emergencies.

Since water damage can increase fire losses considerably, salvage work is stressed. The men are trained to use chutes to channel water out of buildings and the proper methods of covering furniture especially in rooms below the fire.

Professional instruction

Greenwich units have attended the New York Fire Patrol's salvage school and the New Haven, Conn., fire training school. Recently after attending a salvage course at the New Haven Training Center, the members arrived home in time to operate at an attic fire where they spread tarpaulins over furniture and other effects on the lower floors. Chief Thomas Dewey of the Cos Cob Fire Department, praising the members for their timely arrival, said water damage was kept to a minimum by the efforts of the fire police contingent.

The units have also held training sessions at Westchester County Airport, N. Y. This is another program which enables the men to obtain experience under analogous conditions. At a simulated plane crash, the men use their knowledge to first rescue a person and then to perform whatever salvage is possible. All these training sessions under the watchful eyes of experts have paid off many times. A number of letters on file at each unit's office attest to the cutting of losses through quick, efficient salvage, which is constantly stressed to the volunteers.

The units obtain needed equipment, fire patrol trucks, ambulances and latest tools of the trade through their own efforts. While the town supplies funds for these purchases, the men sometimes find that to have the latest, more than the town allocation is necessary.

Since their inception, the Greenwich units have been united in one cause—increasing the safety of the town. Cooperative efforts, well-planned programs and devotion to duty have made the units indispensable. □□

Recently acquired apparatus of Cos Cob Fire Patrol features overhead protection for all personnel responding or returning with apparatus

L. A. County Builds Mobile Station

The Los Angeles County Fire Department currently has under construction its first "permanent-portable" station.

Station 117 is being erected in Lancaster in the Antelope Valley region of the county on land leased on a long-term basis from the State Fairgrounds Association.

The 2,676-square-foot station is designed to house two pieces of apparatus and will have work room, hose storage, oil room, kitchen and recreation room combined, toilet and locker room, eight-bed dormitory, and office.

The building is constructed of steel panels and insulated with a steel roof. It will have forced air heating and evaporative air cooling because of the extremely hot summers in the Antelope Valley.

"We are erecting this type of station," explained Assistant Chief Victor Petroff, "because at present the expansion of Lancaster cannot be predicted. If the city grows in another direction, the station can be readily moved."

Lancaster is the center of the booming region on the edge of the Mojave Desert which is near the huge Air Force test center at Edwards Air Force Base and Palmdale Test Center for major aircraft companies.

Total cost of the station will be $45,000 including hose tower, gas pump and tank, paving and built-in kitchen appliances.

—Cliff Dektar

Vaccine for Burns May Be Possible

Research based on a new technique for reducing the toxic effects of burns may result in a vaccine to generate natural immunity to burn toxin.

At the suggestion of Dr. Sol Rosenthal of Chicago, and with the help of the U. S. Navy Bureau of Medicine and Surgery, Chicago hospitals used the new technique in treating those children most severely burned in last December's Chicago school fire. A paper written at the Chicago branch of the Office of Naval Research gives this explanation of the treatment:

A severe burn (perhaps all severe injuries) results in a release of toxic material into the blood stream. This toxic material is injurious to the remote tissues of the body. The badly burned individual produces antibodies slowly, often too slowly to combat the effects of the toxin on the blood and on blood vessels. Such an individual may succumb to the toxic effects of a burn.

To combat this threat, the victim is given a transfusion of blood from another individual who has recently recovered from bad burns. The blood, because of the donor's burn experience, is high in antibodies against the toxin.

When a jet fighter plane crashed on the deck of the aircraft carrier Essex last May 28, the Navy used the technique to save those burned in the crash.

Action at recent $100,000 Weiss Brothers fire. Note extensive laddering of building from street sides

GRAND RAPIDS FIRE DEPARTMENT

Ladder companies begin drill to evacuate eight-story building. Practice in evolution is carried out on actual building in companies' districts

By CHIEF ADRIAN J. MEYERS

GRAND RAPIDS, MICH., first hosted the International Association of Fire Engineers in 1909. Within the ensuing 50 years, the Association, with its name changed to "Fire Chiefs," has held its annual conference in the city on the banks of the Grand River in 1944, again in 1951 and will soon meet here once more in 1959. To those delegates and guests as well as readers who have never visited Grand Rapids, the following information may be of interest.

Protecting the approximate 200,000 residents and $1,500,000,000 of real estate within the city boundaries against fire is a force of 265 officers and men who staff 13 engine companies, five ladder companies and one rescue squad. These units are housed in 13 stations. The budget administered by the fire chief's office for the year 1959 is $1,700,000.

The alarm system is of the telephone type with 285 street boxes. This is operated by two dispatchers on each shift under the direction of the supervisor of communications. Dispatching of companies in response to an alarm is by means of

two-way intercom and telephone with radio for use with apparatus.

Normal residential response consists of two engines, a truck company, rescue squad and district chief. Still alarms for rubbish, automobiles, etc., call for one or more companies depending on the circumstances. In the high-value districts, four or more engines respond, together with two trucks and the rescue squad. Manpower for the units consists of six men per engine company and seven men on each truck and the rescue squad.

Supervising the department under the command of the fire chief are one deputy chief, eight district chiefs, 19 captains and 19 lieutenants. Each piece of apparatus has an engineer assigned per shift.

The men work 63 hours average per week and are subject to recall after the first 2-1-1 alarm. Upon recall, the off-duty force mans eight engines, two trucks and a rescue squad maintained in reserve. A four-man maintenance force services all the department's apparatus.

Operation

Water supply for the city is obtained from Lake Michigan, about 30 miles distant. Approximate pumping capacity of the water system is 70,000,000 gpd and 55,000,000 gallons are maintained in storage. The fire department has available 39,000 hydrants for its use.

One or two hose lines are stretched at all residential fires. At commercial or industrial alarms each engine stretches two lines and then returns to the hydrant for hook-up. To facilitate quick entry and attack, all apparatus is equipped with two or more self-contained masks.

Training

The training program is in charge of the deputy chief who directs a weekly session of all district chiefs. The latter then instruct the company personnel. Each company receives eight hours drill each week from a district chief and eight hours from his company officers.

A district chief holds each training class with two companies from his own district and a third company from another district. In this manner, under a round-robin system, all men eventually receive training from each district chief in the department. District training is conducted at the drill grounds located at the "Island" with company drill taking place in each station.

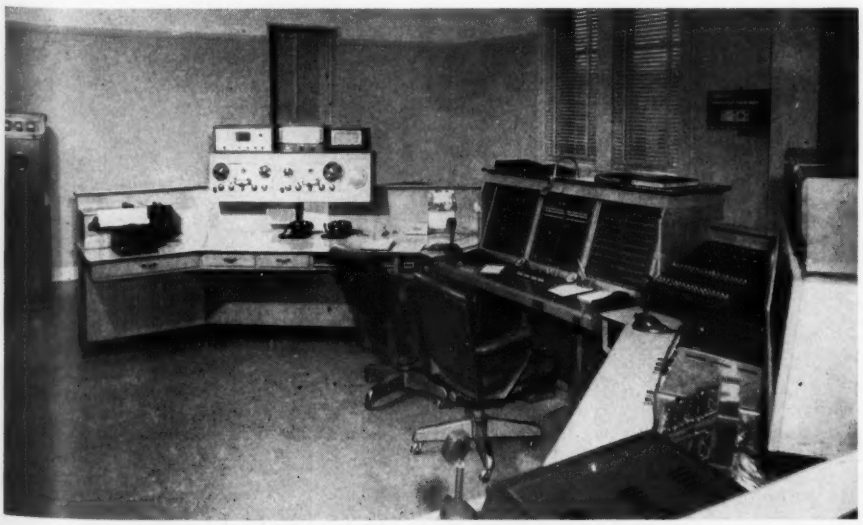
Fire prevention and investigation

The inspection division consists of a chief and four inspectors who specialize in heating, church and school, industrial and commercial inspections. The division made 21,300 individual inspections during 1958.

In addition the individual fire companies also make home, school, church and industrial inspections in their own district. Over 170,000 of the latter were made in 1958 and it is expected this total will be increased in 1959.

The arson squad consists of a lieutenant and a police officer who investigate every fire of over $1,000 damage, as well as all suspicious fires. During 1958 a total of 158 fires were investigated by this team. Twelve of these were of suspicious nature and seven arson convictions were obtained. □□

Grand Rapids rescue squadmen removing victim of cave-in from trench



View of new dispatch office shows (left to right) radio transmitter console; recording equipment; Conelrad alert, monitor and short wave receivers; telephone switchboard; intercom switchboard; desk-top radio transmitters, selective signaling switchboards, radio monitors

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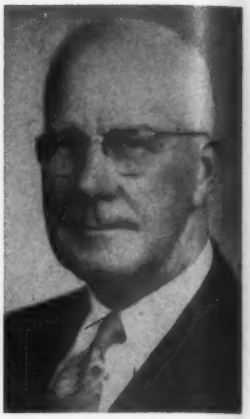

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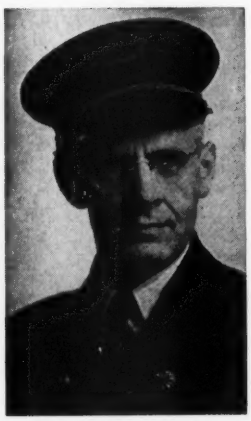

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Chemical Fire Fells 44 Los Angeles Fire Fighters

On May 6, a first-alarm assignment of the Los Angeles City Fire Department, consisting of two engines, a ladder company and a battalion chief, were dispatched to a fire at 11661 Wicks Street in the Sun Valley area of Los Angeles. The building involved belonged to Poly Resins, Inc., a plastics-processing concern. It was a one-story structure, 65 feet by 95 feet.

First-arriving units found the plant charged with smoke and it was necessary to use breathing apparatus to effect entry. When fire fighters wearing demand masks got into the building, they discovered a small fire burning at the vent of a large drying oven. This fire was quickly extinguished with a carbon dioxide extinguisher.

While the fire was being extinguished, other men from the two engine companies donned filter masks, but these proved ineffective and they were forced to return to the outside. When final extinguishment was complete and the drying oven opened, it was discovered than six 55-gallon drums of some material were inside the oven, boiling furiously. All six drums had ruptured and fumes were being given off freely.

The plant's chemist was called to the scene before the oven was opened and before overhauling operations had started. After much deliberation, he determined that the material involved contained Triphenylphosphite. This material, when heated, gives off phosphine gas which is highly toxic.

Although the chemist told the battalion commander the material was not dangerous, the chief instructed all members who were not equipped with breathing apparatus to remain outside the building. The smoke from this burning material was very heavy, however, and even the fire fighters outside the structure received some exposure. Additional fire department units were called to provide more self-contained masks and overhauling was accomplished only by men wearing suitable respiratory protective equipment.

As a result of their contamination by exposure, some 44 men were examined by the fire and police surgeons at Central Receiving Hospital. This procedure was largely precautionary as only two firemen were hospitalized for further observation.

PROGRAM

I.A.F.C. Conference, Grand Rapids, Mich.

Saturday, August 29

10:00 a.m. Board of Trustees Meeting of International Fire Administration Institute—Pantlind Hotel
8:30 p.m. Executive Committee Meeting—Pantlind Hotel

Sunday, August 30

1:00 p.m. Registration—Exhibit Hall
2:00 p.m. Board of Directors Meeting—Pantlind Hotel
4:30 p.m. Committee Meetings—Civic Auditorium
Constitution and By-Laws
Civil Service Classifications

Monday, August 31 (Chief R. C. Malmquist, presiding)

8:00 a.m. Registration—Exhibit Hall
9:00 a.m. Exhibits—Exhibit Hall
9:30 a.m. Opening Session—Civic Auditorium
11:00 a.m. Memorial Service
1:30 p.m. Business Session
1:45 p.m. Report of the Treasurer, Chief G. A. Mitchell
1:55 p.m. Report of the Secretary-Manager, B. Richter Townsend
2:10 p.m. **The Fire Chief and the Unions,** William D. Buck, President, International Association of Fire Fighters and Chief Dan F. Vogel, Cincinnati, Ohio
2:45 p.m. **The Fire Service in the United Kingdom,** Chief F. W. Delve, London, England
3:15 p.m. **Report of the Constitution and By-Laws Committee,** Fire Marshal William J. Scott, Chairman
3:45 p.m. Committee Meetings—Civic Auditorium
Communications
Nominations
Arson

Tuesday, September 1 (Chief A. H. Lintelman, presiding)

9:30 a.m. Business session
9:45 a.m. **Boy Scout Committee Report,** Chief Albert W. Kimball, Chairman
10:00 a.m. **Discussion—Committee on Civil Service Classifications,** Henry J. McFarland, Chairman; Commissioner Edward J. MacDonald; Chief Irving D. Merrick
11:00 a.m. **Progress in Home Fire Inspection Program,** Chief Jay W. Stevens, Chairman
11:15 a.m. **Arson Committee Report,** William D. Rossiter, Chairman
11:30 a.m. **Communications Committee Report,** Edwin L. Heath, Chairman
11:45 a.m. **Committee on Nominations Report**
1:30 p.m. **Flammability of Textile Products,** B. J. Goldberg, Special Consultant to the Textile and Allied Industries
2:00 p.m. **Civil Defense Planning,** Governor Leo A. Hoegh, Director, Office of Civil and Defense Mobilization, Washington
2:30 p.m. **Fire Protection Problems in a Smaller Community,** Francis Hartman, Supervisor of Firemen's Training, University of Michigan
3:00 p.m. Business session

Wednesday, September 2 (Chief W. J. Taylor presiding)

9:30 a.m. Business session
9:45 a.m. **What Is Expected of Today's Fire Chief,** Chief Henry G. Thomas, Consultant, National Board of Fire Underwriters
10:15 a.m. **Industrial Fire Safety Looks to the Future,** John J. Ahern, Director of Security, General Motors Corporation, Detroit, Mich.
10:45 a.m. **The Fire Chief and the City Manager,** Honorable Alfred H. Rypstra, City Manager, Grand Rapids, Mich.
11:30 a.m. **Report of the Committee on Nominations**
1:00 p.m. **Gasorama**—Michigan Consolidated Gas Company
2:00 p.m. **Committee on Nominations**—Report on balloting
2:00 p.m. **Grand Rapids Fire Department Demonstration**
7:00 p.m. Banquet-Floor show

Thursday, September 3 (Chief A. H. Lintelman, presiding)

9:00 a.m. Business Session
10:00 a.m. Committee Reports
Resolutions Committee
Joint IAFC-NFPA Fire Apparatus Committee
Exhibit Committee
Fire-Police Consolidation Committee
Membership Committee
President's Advisory Committee
Publications Committee
Advisory Committee on Atomic Problems
Training Committee
11:00 a.m. Reports of Divisions, Action on Committee Reports, Installation of Officers

The other 42 fire fighters were released after examination but were ordered back to the hospital for the two following weeks for checks against possible effects of the gas.

Press accounts quoted one of the two men most seriously affected, Fireman Charles Norman, as saying, "Frank Sieman (the other victim) and I were inside the plant, working near the ovens with hand extinguishers. It wasn't much of a fire, and we weren't wearing masks. The fire was almost out when I began having trouble with my breathing. I turned around and saw Frank clutching at his throat. Then I saw some drums piled up nearby. They were labeled Triphenylphosphine. I knew then we were in trouble."

Triphenylphosphine is defined by N. Irving Sax in *Dangerous Properties of Industrial Materials,* as follows: "Probably highly toxic; fire hazard moderate when exposed to heat or flame; explosion hazard slight in the form of vapor when exposed to flame; disaster control dangerous. When heated to decomposition it emits highly toxic fumes of phosphine and oxides of phosphorus; can react violently with oxidizing materials."

Roi B. Woolley

FIRE ENGINEERING is indebted to Fire Chief William Miller and Deputy Chief William R. Goss, Los Angeles Fire Department, for the special report on this incident.

Oregon Chiefs Meet

The Oregon State Fire Chiefs' Association held its annual conference on June 21 to 24 at Eugene. Chief E. L. Smith of Eugene was elected president; Chief Ted Miller, Four Corners, first vice president; and Chief Vern Carlon, Bend, second vice president. Re-elected were Chief Harry Kreiger, Springfield, secretary, and Chief Ivan Pearson, McMinnville, treasurer.

The conference was part of a joint meeting of four Oregon organizations. Convening the same time were the Northwest Section, International Municipal Signal Association; the Oregon Rural Fire Directors Association and the Oregon Volunteer Firemen's Association.

Former Glenbrook Chief John W. Cook presses down the lever to ring telephones on the third of the three command alarm circuits. Levers for the other two circuits are above his hand

—Photos by Arnold Walter

Telephone Breaks the Sound Barrier in Connecticut

New system overcomes obstacles of community noise level and home insulation to alert volunteers

By ASSISTANT CHIEF RICHARD P. SYLVIA

Noroton, Conn., Fire Department

THE FIRE ALARM sound barrier is being broken in Connecticut these days with the use of telephone company facilities. The trend toward more thoroughly insulated homes, the increasing use of storm windows and the ever-blaring television or radio sets have been building up a sonic wall between the volunteer fireman and his firehouse whistle or siren.

The Glenbrook Fire Department, which covers a section of Stamford, Conn., has found that more and more the public alarm signals are not getting into the homes of the volunteer firemen. The men are there and eager to respond, but the coded whistle cannot breach the walls of their sound-tight homes.

But the installation of a command telephone circuit has changed things. When the Glenbrook dispatcher receives a fire call, she transmits both the usual whistle signal and a command circuit phone signal.

The dispatcher depresses a lever which rings the ordinary telephone bell in the homes of 21 firemen. In Glenbrook, there are three command circuits, each controlled by a separate lever, so a total of 63 firemen can be alerted. By keeping the lever depressed for several seconds, the telephone bells in the homes ring for that length of time. Thus, the fireman at home recognizes the extended ring as a fire call. Firemen are beginning to answer the phones by the time the dispatcher finishes ringing each of the three circuits.

The dispatcher can then talk over all three circuits at the same time. She announces the location of the fire—or any other emergency—and she may give any other pertinent information at that time. This message is repeated several times so that the last men answering their telephones get the complete alarm details.

After a fireman receives the full message, he merely hangs up his telephone and automatically disconnects it from the fire alarm command circuit. It is again ready for family use.

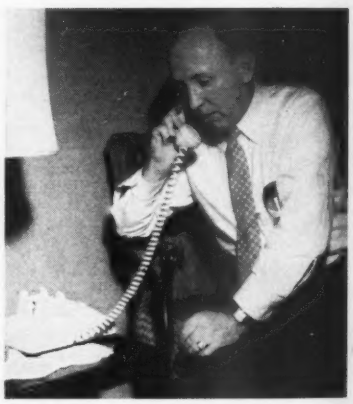
Automatic cutoff

If the dispatcher thinks that some heavy sleepers need an extra ring, she keeps her receiver off the hook and depresses the ringing levers again. The neat part about this is that the bells of the telephones that have already been answered will not ring this second time. The family doesn't have to endure the jangling of the command circuit while pop is on his way to a fire.

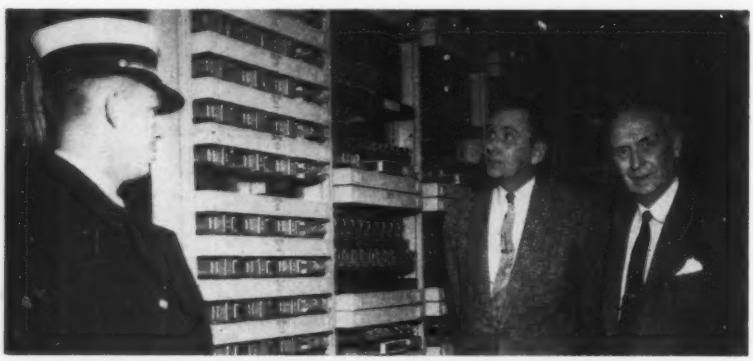
What about the telephones that are being used when the dispatcher starts to sound the alarm? That's been taken care of by the engineers of the Southern New England Telephone Company. Operation of the ringing lever by the dispatcher creates a distinctive tone in any telephone in use. This is a signal for the person in the fireman's house to say: "A fire alarm is coming through. Please hang up your phone."

Both parties to the conversation hang up their telephones. Then the fireman

Continued on page 780



A fire alarm transmitted by the command telephone circuit is received by Samuel C. Wadhams, a Glenbrook fireman, at his home on standard equipment. At present a private line can only be installed in a residence



Central office equipment for the command conference circuits is shown in the nearest bay at the Stamford, Conn., telephone building

THE FYR-FYTER NEWS
FIRE DEPARTMENT EDITION
AUGUST, 1959

Fyr-Fyter . . . THE SOURCE for over 1200 fire department products!

NEW *Fyr-Fyter* AMBASSADOR 100% Dacron* Municipal Fire Hose

...built stronger to last longer!

Fabricated in an entirely new way to provide an extended service five times greater than regular hose!

Features "rubber-bonded" all-Dacron double jacket. Jackets are held permanently in place . . . can't slip or rub to cause concealed wear.

Extruded synthetic tube—freeze-proof to 65° below zero—offers positive protection against ozone, water, chemicals and the danger of delamination.

Scuff resistant . . . can be dragged for miles without fraying.

Minimum water absorbency. No drying required. No spare hose needed!

Can be left wet on truck without fear of mildew.

Stronger, lighter, more flexible than conventional hose.

No problem of stiffness. Racks compactly. Can be unloaded and handled, wet or dry, with ease and speed.

Hose tests 600 lbs. Available in 1½" or 2½" dia., 50 ft. lengths.

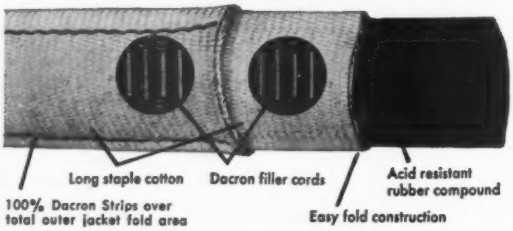
Unbonded, 100% Dacron double-jacket Ambassador hose can also be furnished.

**** DuPont trademark for its polyester fiber.***

Fyr-Fyter ... *THE SOURCE for*

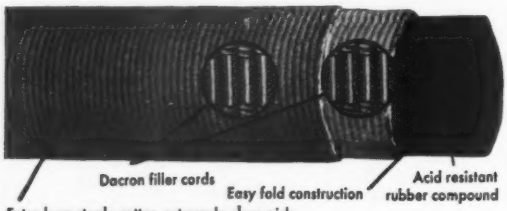
MUNICIPAL FIRE HOSE

Patented SUPER FYR-STRYPE *Reduces Hose Wear 90%!*


Long staple cotton
Dacron filler cords
Acid resistant rubber compound
100% Dacron Strips over total outer jacket fold area
Easy fold construction

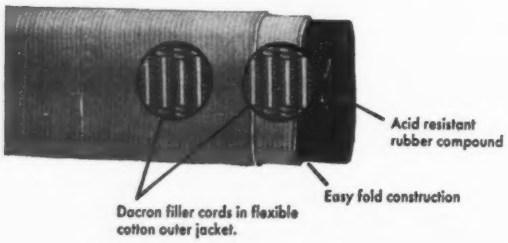
Super Fyr-Strype has pure Dacron strips over the total fold areas (patented feature) to protect highly vulnerable points where 90% of wear occurs on standard cotton jacket hose. Outer and inner jackets are reinforced with Dacron filler cord. Super Fyr-Strype ruggedly resists abrasion . . . dries quickly at folds and creases . . . is 15% lighter and 50% stronger than conventional hose. Hose tests 600 lbs. Available in either 1½" or 2½" dia., in 50 ft. lengths.

Lightweight SUPER FYR-FLEX XL *is Extra Strong and Flexible!*


Dacron filler cords
Easy fold construction
Acid resistant rubber compound
Extra long staple cotton extremely close pick, wax and gum treated for maximum mildew resistance.

Super Fyr-Flex XL is made of extra long staple cotton of extremely close pick, wax and gum treated. The cotton supports Dacron filler cord . . . provides lighter weight, greater flexibility and at least 10% more strength than standard cotton jacket hose. Hose tests 600 lbs. Available in 1½" dia., in 50 ft. and 100 ft. lengths.

Dacron Gives SUPER FYR-FLEX 600 *and* 400 *Strength without Bulk!*



Warp strands of highest-grade cotton are uniformly woven with Dacron filler cord to provide this hose with strength without bulk, plus high resistance to heat, chemicals, water absorption, mildew, abrasion and wear. Super Fyr-Flex 600 tests 600 lbs., available in 1½" and 2½" dia., 50 ft. lengths. Super Fyr-Flex 400 tests 400 lbs., available in 1½" and 2½" dia., 50 ft. lengths.

Fyr-Fyter also offers high-quality fire department Booster Hose of wrapped duck or molded construction, and hard and soft Suction Hose.

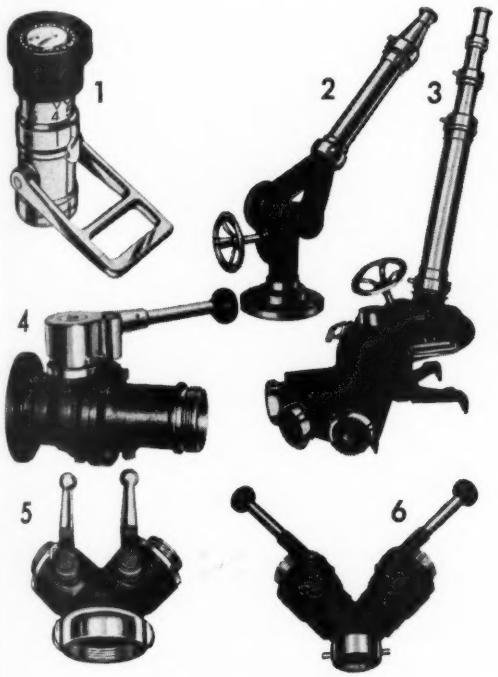
MANGA-FORGE COUPLINGS

Specified by increasing numbers of fire departments. Reinforced MANGA-FORGE couplings are forged from special manganese-bronze alloy for greater strength, durability and corrosion resistance. Furnished with Fyr-Fyter Ambassador 100% Dacron hose, Super Fyr-Strype, Super Fyr-Flex XL and Super Fyr-Flex 600 and 400. Alternate couplings can be furnished upon request.

Fyr-Fyter · Pyrene · BUFFALO better-built

over 1200 fire department products !

Combine High-Quality Fyr-Fyter Hose with Modern WOOSTER BRASS GOODS



VARI-A-FOG NOZZLES

This outstanding flo-rated nozzle (illustration No. 1) has only two main parts—pattern control and shut-off control. Stream pattern can be dialed from a 90° wide angle down to straight stream in less than one complete turn. Seven models available, including 500 and 1000 G.P.M. units for master-stream appliances.

DELUGE NOZZLES

Portable models, (illustration No. 3) including Geyser Deluge and ladder pipes, and permanent-mounted (illustration No. 2) deck pipes for all types of fire apparatus, including fire boats.

CONTROL-FLO VALVES

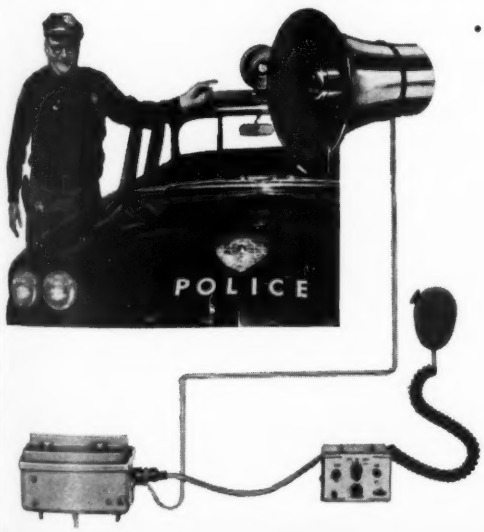
Rugged, leakproof, quick-acting valves (illustration No. 4) in 4 sizes, 1″, 1½″, 2″, and 2½″, for hose reel; pre-connected lines; tank to pump connections; rear, side, front suction pump discharge; interior and exterior duty.

SIAMESE AND WYES

Siamese (illustration No. 6) and Wyes (illustration No. 5) in reducing type, 2½″ size types, leader-line, clapper valve, and water thief models.

PENETRATOR® Electronic Siren, P.A. Unit and Radio Amplifier

. . . beams sound ahead up to one mile!



Penetrator's powerful 50-watt, "Class A" rated electronic siren projects siren or voice up to one mile ahead of fire department trucks, cars and ambulances. Because 90% of the sound is beamed ahead of the emergency vehicle, drivers can hear other sirens and avoid collisions. With a "flip of a switch," Penetrator can serve as an authoritative high fidelity public address system for directing fire fighting, controlling crowds, riots, parades, etc. Penetrator also ties into vehicle's 2-way radio to amplify incoming messages.

Weatherproof . . . defies dust, rain, ice and snow. Will perform perfectly in the warmest or coldest weather. Easy to install. Complete system weighs less than 15 lbs. Penetrator won't wear down the battery! System draws only ½ amp. on standby, 2 amps. when used for public address, and only 4 to 5 amps. when used as a siren.

GLOBE AUTOMATIC SPRINKLERS · DAYTON · SAPA ALARMS · ENGINEERED C-O-TWO SYSTEMS · WOOSTER BRASS · ACCESSORIES

Fyr-Fyter ... *THE SOURCE for over 1200 fire department products !*

A Complete Line of BREATHING AIDS *. . . Modern, Compact and Efficient!*

GUARDSMAN AIR MASK

A fireman wearing a Bureau of Mines approved Guardsman Air Mask can breathe with complete safety in any toxic atmosphere for over 30 minutes! The compact Guardsman, a piece of modern emergency equipment that every department should carry, consists of a single high pressure 38.5 cubic foot cylinder, carried comfortably on the back, and a highly efficient demand regulator valve which provides breathing air to a fog-free mask that covers the entire face. Sturdy case is provided to protect the apparatus when not in use. Guardsman Oxygen Mask, for which Bureau of Mines approval is pending, is also available.

Custom Seeler Universal Resuscitator

This portable resuscitator-inhalator-aspirator has been responsible for the saving of hundreds of lives. Developed by the Aero-Medical Laboratory of the U. S. Air Force, it provides safe, effective resuscitation for a large variety of respiratory emergencies . . . drowning, electric shock, carbon monoxide inhalation, asthmatic attacks, cardiac cases, etc. Cycling is adjustable for adult, child or infant breathing rates. Resuscitation time available is 22 minutes with 100% oxygen or one full hour with air dilution. These times can be extended indefinitely by coupling cylinders to inlet fitting on the case. Furnished complete with aspirator, face pieces and all necessary accessories.

Fyr-Fyter's complete line of breathing apparatus also includes: Mouth-to-Mask "Manual" Resuscitators; "Short-Snorter" Air Masks; combination Air Mask and Portable Resuscitators; and Demand Oxygen Inhalators.

Visit our I.A.F.C. booths 23–25

Developed Especially for Fire Department Use . . . New Fyr-Fyter FOAM PAKS

Available in Eight Different Sizes

Get more mileage out of your portable water supply . . . control flammable liquid fires fast, the modern way, with air/foam.

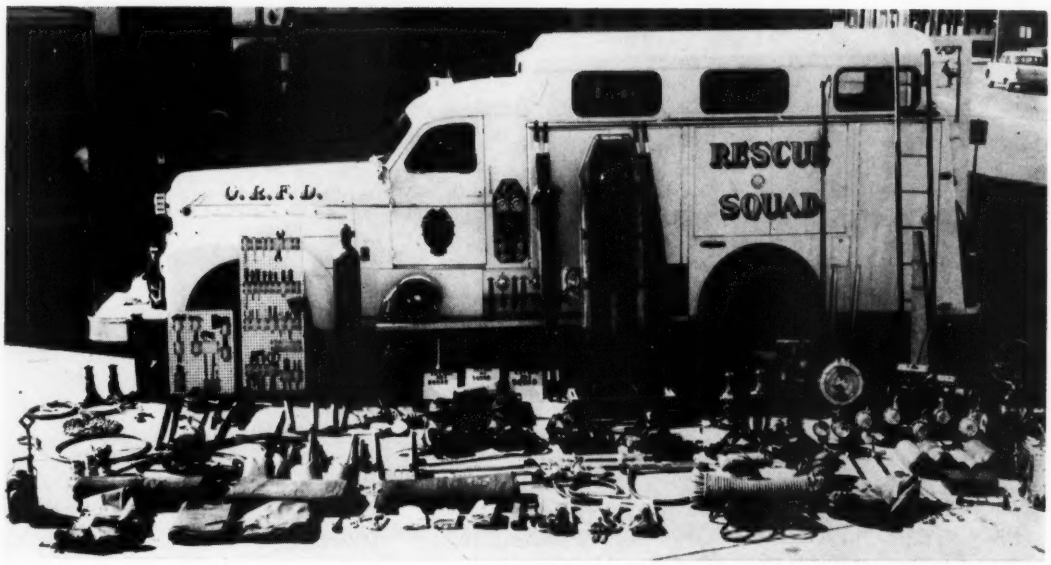
- *FOAM PAK includes at one single low price: air/foam system.*
- *Each Fyr-Fyter FOAM PAK is a complete, easy to carry and use. . . . Underwriters' approved lightweight aluminum alloy playpipe —20, 40, 60 or 120 GPM size . . . Pickup tube . . . Supply of Fyr-Fyter's exclusive 3% High Expansion Foam Compound—5 to 80 gallons, 10 to 20 minutes operating time, depending on the PAK size you prefer for your truck.*

For the quick, effective control of gasoline, oil, grease, paint and other flammable liquid fires, FOAM PAK produces a fluid air/foam blanket in seconds. Simply attach water line to playpipe and insert pickup tube in compound container. Because it contains a large percentage of "wetting agent," Fyr-Fyter 3% High Expansion Compound is also an excellent extinguishing medium for ordinary combustible materials.

Economical, packaged for your ordering convenience, compact for handy storage, easy to use, engineered to deliver the very maximum volume of air foam, there's a new Fyr-Fyter FOAM PAK sized exactly right for every fire department vehicle. Place your order today with your local Fyr-Fyter Sales and Service Representative.

Fyr-Fyter · Pyrene · BUFFALO better-built · Elkhart · DAYTON · SAPA · Co-Two · Amerex · Monster

products of **THE FYR-FYTER COMPANY**, Dayton 1, Ohio



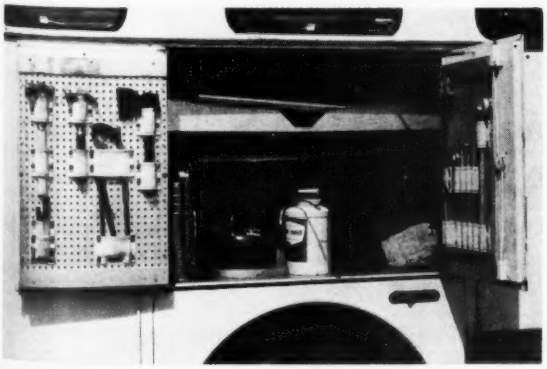
Grand Rapids rescue unit mounts 1,000-gpm pump, around-the-pump foam proportioning system and 100-gallon foam liquid tank, 15,000-pound capacity winch 1,000-watt alternator, mobile radio and a large assortment of rescue tools

short cuts and gadgets

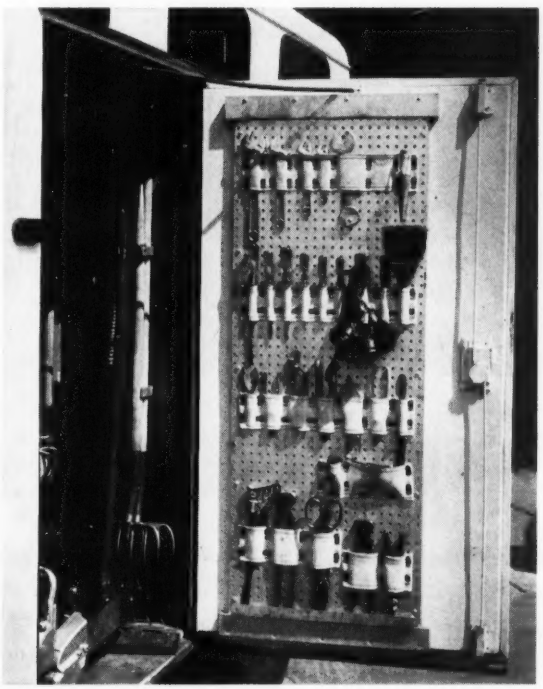
Peg-Board Keeps Rescue Tools Orderly

Visitors to the forthcoming conference of the International Association of Fire Chiefs at Grand Rapids, Mich., will have the opportunity of viewing many new developments in fire apparatus and equipment. A novel idea used by the Grand Rapids Fire Department is well worth a second look.

The rescue squad employs peg-board panels fitted with canvas webbing as a convenient means of storing small hand tools in a neat and orderly fashion. Not only does this method facilitate fast visual survey of the equipment, but it also permits more efficient use of the storage capacity of the vehicle's compartments. It is a good example of the old master mechanic's saying, "A place for every tool and every tool in its place."



Peg boards are attached to interior of compartment doors and permit rapid selection of necessary small tools



Advantage is taken of full height compartment designed for long-handle tools and other bulky gear. Board holds assortment of wrenches, screwdrivers, etc.

New M-S-A® DEMAND REGULATOR an

When you buy an M-S-A Air or Oxygen Mask, with the new M-S-A CLEARVUE Facepiece and Demand Regulator, you can give positive "yes" answers to all these important questions about breathing equipment.

FACEPIECE

Q. Is lens easily replaceable in field without special tools?

Q. Does lens fastening device create the uniform tension that prevents loosening, pop-out, and leakage?

Q. Is the facepiece designed to prevent lens from fogging?

Q. Does the facepiece provide a means for mounting and adjusting prescription glasses inside the facepiece without affecting the seal?

Q. Is there a molded lip inside the facepiece to provide a comfortable leak-tight fit on a wide variety of faces?

Q. Does facepiece have a chin stop to eliminate improper positioning and wearing discomfort?

Q. Is exhalation valve well guarded from possible damage and yet readily replaceable?

Q. Is there a speaking diaphragm?

DEMAND REGULATOR

Q. Does admission valve have two-lever sensitivity (easily demonstrated) which provides large volumes of air with minimum breathing effort?

Q. Is filte
prev
Q. Is high
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Q. Is pre
exce
Q. Is dia
seal
Q. Is by-
frag
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Every

and New CLEARVUE* FACEPIECE

Q. Is filter of pressure-reducing valve efficient enough to prevent entry of extremely fine particles?

Q. Is high pressure side forged brass which offers optimum strength to withstand high pressure from cylinder?

Q. Is pressure relief valve mounted externally so that any excessive pressure vents safely to the atmosphere?

Q. Is diaphragm in regulator designed to serve as its own seal without using cement and a piece of string?

Q. Is by-pass valve flow internal rather than through a fragile piece of tubing mounted externally?

Q. Is hand-wheel on cylinder valve in an easily accessible horizontal position?

Only the new M-S-A CLEARVUE Facepiece, only the new M-S-A Demand Regulator give "yes" answers to all these questions. We'd like to demonstrate these exclusive advantages. Ask the MSA man to call. And write us for helpful literature. Mine Safety Appliances Company, Pittsburgh 8, Pennsylvania. In Canada: Mine Safety Appliances Company of Canada, Ltd., Toronto 4, Ontario.

*Trademark

MINE SAFETY APPLIANCES COMPANY
Pittsburgh 8, Pennsylvania

MSA® SAFETY EQUIPMENT HEADQUARTERS

Every day—in many ways—MSA products safeguard millions of lives

WHAT'S NEW

Among the Manufacturers

- products
- processes
- personalities

Hi-Ranger Aerial Platforms

Mobile Aerial Towers, Inc., 1730 North Harrison Street, Fort Wayne 7, Ind., is producing the Hi-Ranger aerial platform in sizes said to range from 30 to 100 feet in height with basket capacities up to 1000 pounds. All units feature hydraulic outriggers and single-lever control. Unit shown has 75-foot reach.

Strato-Tower Platform

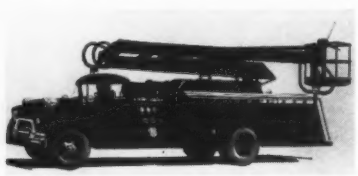
The Strato-Tower Division, Young Spring and Wire Corp., P. O. Box 103, Elkhart, Ind., is producing four standard sizes of hydraulic aerial platforms with

280-degree rotation. These range from 35 to 95 feet and all are said to be controlled by a single lever. Units are available with wheeled or steel pad-type outriggers and basket capacity up to 500 pounds.

The unit shown in the illustration is a 45-foot platform which was pressed into service at Ironton, W. Va., last February during a fire at a drive-in.

Pitman Aerial Platform

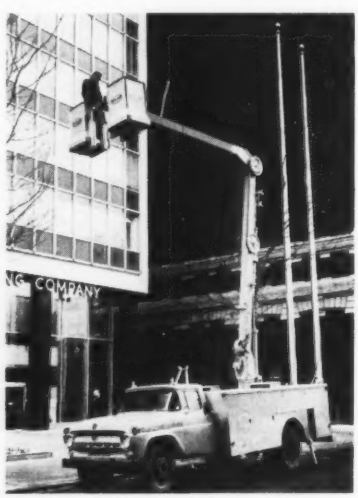
The Pitman Manufacturing Co., Grandview, Mo., has announced that its latest 50 and 65-foot aerial platforms mounted on a pumper chassis for fire service use



will be demonstrated at the forthcoming Grand Rapids Conference of the International Association of Fire Chiefs. It is claimed the units have a 1,000-pound capacity, hydraulic outriggers and 360-degree rotation.

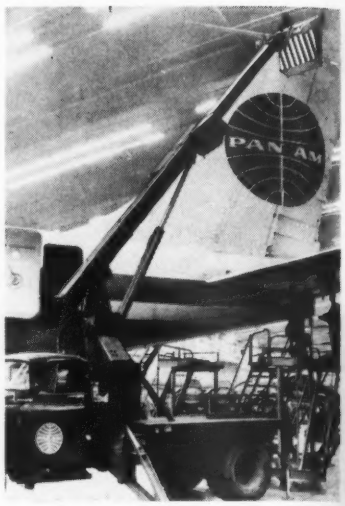
Holan Aerial Elbow

The J. H. Holan Corp., 4100 West 150th Street, Cleveland 35, Ohio, has introduced a cable-controlled aerial elbow



with twin-bucket design. The unit is said to reach a maximum height of more than 36 feet with 360-degree rotation. Capacity is claimed to be 600 pounds.

Truco Aerial Lift



Truck Equipment Co., 3963 Walnut Street, Denver 5, Colo., is marketing Truco hydraulic operated aerial lifts. The units are said to be of the telescoping type in sizes up to 100 feet in height and to have full 360-degree rotation. Basket capacity is rated at 500 pounds.

Industrial Monkey

The Peters Co., 1933 S. E. Union Avenue, Portland 14, Ore., is manufacturing The Industrial Monkey, a telescoping boom-type of aerial platform. The hydraulic units are available in heights from 30 to over 60 feet and 270 to 360-degree rotation.

Continued on page 731

—The World's Most

ADVANCED AMBULANCES!

THE SENTINEL

MOBILE EMERGENCY HOSPITALS, SCIENTIFICALLY DESIGNED TO SAVE LIVES, REDUCE SUFFERING AND PROVIDE FOR BETTER MEDICAL CARE

THE VOLUNTEER

THE AMBULANDAU

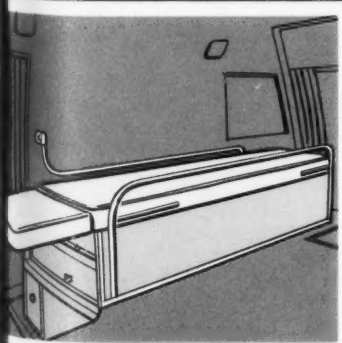
M-M Ambulances go far beyond the outmoded dictionary definition of an ambulance. They are more than "vehicles for hauling the sick and injured." Every M-M Ambulance is engineered to give top efficiency in any emergency.

A dynamic program of ambulance research—close consultation with the medical profession, hospitals, rescue teams, civil defense units and fire departments—has given M-M an up-to-the-minute awareness of what ambulance operators everywhere want. Result: the most advanced ambulances the world has ever known.

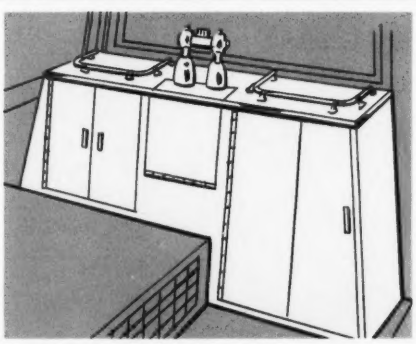
For complete information on the ambulances designed for *full-range* emergency performance, contact your M-M distributor or write:

MILLER-METEOR MOTOR CAR DIVISION
DIVCO-WAYNE CORPORATION
BELLEFONTAINE, OHIO

M-M FEATURES LIKE THESE RESULT IN BETTER SERVICE—MORE LIVES SAVED!



A CAPACITY AND PATIENT COMFORT
ambulances are available in 2 headroom heights d 48", and with the capacity for up to 4 litter he special Cadillac chassis is designed for match- g comfort as well as peak performance.



THE FACILITIES FOR PEAK EFFICIENCY
M-M offers extra-large, extra-deep dispensary cabinet, including provision for resuscitator, demand oxygen and other equipment. Two-way radio set-up, air conditioning and many other features improve your service.

EASIER, FASTER LOADING
All M-M doors extend far into the roof for easier loadi Huge rear door permits the loading of cardiac patients an upright position. First aid bar in the rear door spe medical attention to persons outside the ambulan

Continued from page 728

Hydraulic Safety Seat

Protect-O-Matic Corp., 112 Killewald Avenue, Tonawanda, N. Y., has introduced a new safety system which it is claimed will prevent the forward lurching of persons seated in an automobile when the vehicle is in a front-end collision.

A chrome trigger bar is mounted on the front bumper in the manner of a bumper guard. When struck at speeds in excess of 7 mph, the bar transfers pressure to a hydraulic system which activates two scissor-jacks mounted under the front seat. The force exerted raises and slides the seat forward in a "scooping" fashion. It is said this action prevents the occupant from being thrown forward.

New Chemical Units

National Foam System, Inc., West Chester, Pa., recently delivered two new chemical trucks to Baltimore, Md. Built to the fire department's specifications on GMC chassis, the units carry 700 gallons of 3 per cent Aer-O-Foam liquid and 300 gallons of Drench wetting agent. Each is equipped with six 2½-inch inlets for receiving water at up to 200 psi pressure from a pumper. Six 2½-inch discharge outlets and a PW-51 variable spray turret nozzle are provided. Proportioning is accomplished by Aer-O-Flow Indication Proportioning employing two flow meters, and a maximum discharge rate of 1,200 gpm is said to be possible.

Scuba Diving Gear

Rose Aviation Inc., Box 75, Aurora, Ohio, is marketing the "Pro" self-contained underwater breathing apparatus for use by firemen, rescue squads, etc., in all water emergency operations. Units may be purchased singly or as a kit including fins, underwater mask and carrying case.

FEMA Names Committee

A reorganization of its Sales and Marketing Committee was made at the June 17 meeting of Fire Equipment Manufacturers' Association, Inc. Fred S. Buckley, Walter Kidde & Co., Inc. was named chairman. Membership includes W. E. Morgan, Jr., of Kidde as alternate; W. P. Barwinkel, American La France, with G. J. Halpin of that division as alternate; A. C. Trautwein of the Fyr-Fyter Co., and Don O. Wood as his alternate. Other members are L. C. McKesson, Ansul Chemical Co., and Arthur Guise of Ansul as alternate, plus Stewart Boal, Randolph Laboratories, Inc.

New Radio Alarm System

Hobby Enterprises, Inc., 17 Second Avenue, Bay Shore, N. Y., is marketing a radio alarm system for use in alerting firemen, first aid squads, civil defense volunteers, etc. It consists of a master control which is attached to an existing fire department radio transmitter and individual tone-controlled receivers placed in the homes of department members or other locations convenient for use. Normally silent, the receivers operate whenever the special tone is sent from the base transmitter. Any necessary message concerning fire or other emergency location may then be transmitted to all listeners.

Helicopter Foam Pod

Janitrol Aircraft Division, Surface Combustion Corp., 4200 Surface Road, Columbus 4, Ohio, has designed a foam extinguisher pod for use in fighting off-field aircraft crash fires. Used in conjunction with a Kaman Aircraft Corp. H-43 helicopter, the 1,000-pound pod may be airlifted to the crash scene with its operating crew and set down in any cleared area larger than the 50-foot helicopter rotor blades. The fire fighters then may employ the 850 gallons of foam pressurized by nitrogen on a fire. Forcible entry tools are also included with the unit. The H-43 helicopter assists the fire fighters by the pilot properly directing the air wash of the beating rotors.

New M-S-A Facepiece

A new facepiece for gas masks, hose masks and demand breathing apparatus has been developed by Mine Safety Appliances Company, Pittsburgh. Called the

M-S-A Clearvue, it features a large single lens designed to eliminate fogging, and has an improved speaking diaphragm and built-in accomodation for prescription glasses. It will be incorporated in virtually the entire M-S-A line.

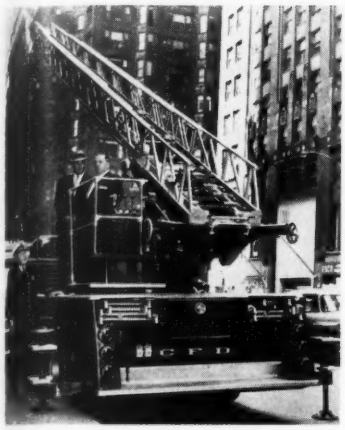
New Mask Alarm

Scott Aviation Corporation announces a new audible alarm for use with its Air Pak which, by the sound of a ringing bell, warns the wearer that the air in the cylinder is low. In operation the alarm is preset at the factory to sound off at 400 psi and continue to ring until the air supply is exhausted giving ample time for the wearer to make a safe exit. The alarm is connected directly to, and actuated by, the air supply.

New Schneck Products

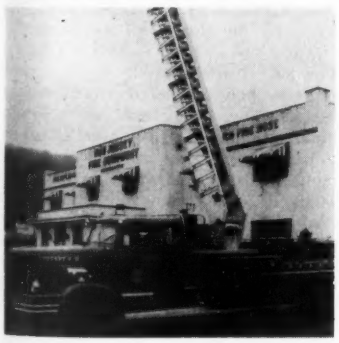
Schneck Textile Fibre Co., P. O. Box 473, Narbeth, Pa., manufacturers of "Nysole" protective boot insoles, has announced two new products, the "Bombero" yellow safety coat and "Bombero" gloves. The coat, designed for rescue squads, etc., is said to be made of polyvinyl chloride on a special-base fabric, and is light in weight. It is claimed the coating will not crack, peel or become tacky. The gloves are also coated with polyvinyl chloride and are said to provide warmth and hand protection with a non-slip grip.

Mack Aerial in Chicago



Mayor Richard J. Daley, of Chicago, tries out the controls of new aerial ladder unit, one of four, purchased from Mack Trucks, Inc., Plainfield, N. J. by the Chicago Fire Department. Fire Commissioner Robert J. Quinn stands ready to assist the Mayor, while looking on below is Chief Fire Marshal Raymond J. Daley. The versatile 100-foot steel ladder is hydraulically actuated and, it is claimed, can be fully extended in 36 seconds to reach the 10th floor of an average constructed building. Another 100-foot ladder and two 144-foot aerials are expected to be delivered soon.

Pirsch Aerial for Long Island Town



The Syosset, L. I., Volunteer Fire Department recently placed this new Peter Pirsch aerial ladder truck in service. It has a seven-man cab, hydraulically operated 75-foot, four-section aluminum-alloy aerial and 210 feet of aluminum ground ladders, as well as a 24-foot wood extension ladder. Fifteen compartments carry life nets, radio, smoke ejectors, salvage covers, protective clothing, ladder pipes, deck guns, 3-inch hose, power saw, a 3.5-kw portable generator with six floodlights, and other customary tools and equipment.

The new unit is powered by a 285-hp Waukesha motor and is mounted on a FWD four-wheel-drive chassis. A 1500-watt Leece Neville alternator can operate power tools, floodlights, etc.

Radiation Training Aids

The R. J. Brady Co., 3227 M. Street, Washington 7, D. C., has announced a new set of VisualCast transparencies for use in fire department drill schools. "Series 10—Radiation Fire Fighting Hazards" consists of 42 transparencies with numerous overlays depicting radiation problems and best known solutions.

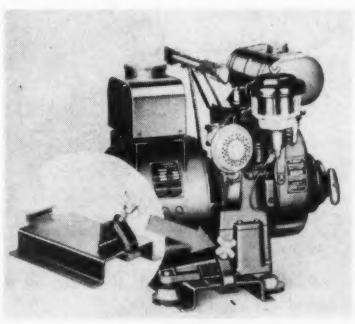
Tone Coded Handie Talkie

A portable tone coded squelch radiophone, designed to block out interference caused by other radio systems on a channel, has been introduced by Motorola Communications and Electronics, Inc.,

4501 West Augusta Boulevard, Chicago 51, Ill. Called "Private Line," the transmitters in a system generate an inaudible coded tone with the voice message. This is detected by a sensitive relay in the receivers. Incoming messages are blocked from the receiver unless the coded tone is present. Consequently, interfering messages from other systems on the channel are normally not heard. The units are available for the 25-50 mc and the 144-174 mc bands, with dry-cell or rechargeable nickel-cadmium power packs.

New Generator Mount

A new "quick release" base to secure a portable electric plant to its mount is now available from Kohler Co. of Kohler, Wis. It is said the electric plant can be readily dismounted from the vehicle merely by loosening the handle. The base, made of steel, is attached to the mounting through four bolt holes.



Akron Expands

A new Canadian company, Akron Manufacturing (Canada), Ltd., is now producing Akron Brass fire fighting equipment in a completely remodeled plant at Aylmer, approximately 20 miles southeast of London, Ontario. The company was formed to better serve the Canadian fire protection market.

Ray Kubec

Its president is Ray Kubec, formerly vice president-sales, Akron Brass Mfg. Co., Wooster, Ohio; Jack H. Brazier is director, research and development; John F. Turner, factory manager; and Harry G. Stefanyk, sales manager.

Radio Tone Alerting Systems

Plectron Corporation, Overton, Neb., has announced a new longer-range tone alerting system for use by fire departments. Newly designed receivers are crystal controlled and fully transformer powered. They are available for automatic tone operation or continuous monitoring.

A new generator, offering eight different tones, is also included and permits alerting several groups individually.

Fire-Retardant Demonstrated

The St. Regis Corporation, 4990 East Asbury, Denver 22, Colo., demonstrated its new F-X fire-retardant paint under fire conditions at New York's Polo Grounds on June 22. Two 2-room plywood structures, 14 feet wide, 7 feet deep and 9 feet high, were erected on the field. One building was coated with F-X, while the other was covered with ordinary interior paint. Identical amounts of straw were placed in one room of each structure.

A fire was started in the straw in the building coated with ordinary paint. In less than five minutes, the fire spread to the adjoining room, and in less than 15

Continued on page 818

—Spokane F. D. photo by Reynolds

IAFC President Reynold C. Malmquist, Minneapolis (right) is welcomed to the Pacific Coast Inter-Mountain Association of Fire Chiefs conference by Host Chief William A. Dunham, Spokane Fire Department. Looking on are (left to right): Rev. Bernard S. Barry, Spokane Fire Department chaplain; Most Rev. Francis P. Leipsig, D.D., L.L.D., Bishop of Baker, Ore., Chief Dunham; Chief James L. Sweeney, Oakland, Calif., president-elect of the association for the coming year; and Jay W. Stevens, secretary-treasurer, San Francisco. Jay was later honored at a special luncheon and presented with 75 silver dollars, one for each year of his 75 birthdays

Pacific Coast Conference Spirited Affair

The 65th annual conference of the Pacific Coast Inter-Mountain Association of Fire Chiefs opened in Spokane, Wash., on July 13. Conferees were saddened by the death of Deputy Chief John Wagner, McMinnville, Ore., only hours before the conference opened, necessitating the absence of President Ivan Pearson of that city from the opening sessions. Over 600 fire chiefs and guests participated in the four-day technical and entertainment sessions.

Officers elected for the coming term are: President, James J. Sweeney, Jr., Oakland, Calif.; first vice president, Chief Harold C. Fisk, Tacoma, Wash.; second vice president, Chief John Garthe, Santa Ana, Calif.; and secretary-treasurer, Jay W. Stevens. The 1960 annual conference will be held in Las Vegas in September.

Two Fire Fighters Killed When Pumpers Collide

Two members of the Syracuse, N. Y., Fire Department were killed, and five others injured, when two pumpers collided at an intersection on July 12. Lieutenant Robert J. McCarthy, who was riding with Engine 7, and Fireman Enrico J. Vendetti, driving Engine 6, died of multiple injuries.

Both units were responding to a fire at 808 South Townsend Street. Engine 6 was proceeding east on East Jefferson Street, and Engine 7 was going south on South Townsend. Engine 6, according to reports, entered the blind intersection and hit Engine 7 in the back of the driver's seat. Both apparatus swerved and crashed into a gasoline station on the corner.

Lieutenant McCarthy was thrown from the seat and dragged between the two pumpers. He fell clear and the wheels of his apparatus passed over him. Fireman Vendetti was thrown from the driver's seat of his pumper.

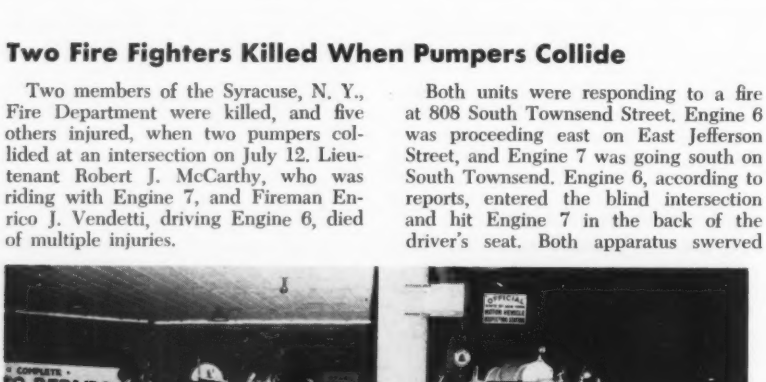
By the time a wrecker was able to pry the two vehicles apart, Lieutenant McCarthy had died. Vendetti was taken to a hospital and pronounced dead shortly after arrival. Rescue operations were complicated by the danger of fumes from spilled gasoline.

Meanwhile, two other engines were dispatched to the fire, two blocks south of the accident scene. Three persons were arrested and held for investigation of the fire which gutted a two-story frame building. One of those arrested at the fire was identified by police as a recent escapee from a state hospital.

Firemen had responded to another alarm at the same address three and a half hours earlier, and had extinguished a mattress fire in an alley adjacent to the building. They noted at that time that the occupants appeared to have been drinking.

Fire Chief Harry Coon said the cause of the collision could not be immediately determined.

J. K. Menzies



After colliding, both apparatus swerved and crashed into gas station, shearing off a portion of corner support and ripping up pump island—Mobile Photo Service

Navy Announces New Extinguishing Chemical

A new chemical agent for combating gasoline and jet fuel fires has resulted from the crash fire research program at the Naval Research Laboratory, sponsored by the Bureau of Aeronautics.

The new agent, called "Purple K Powder," consists of dense-white clouds of very finely powdered potassium bicarbonate. The cheap, nontoxic and easily obtained material will be used in conventional fire extinguishers. It was given the name "Purple K Powder" because of its ability to change hot yellow flames to a cool lavender color during fire extinguishment. It is said to have double the efficiency of sodium bicarbonate powders.

One of the uses of the new powder will be in BUAER's forthcoming "Air Lift" fire extinguisher. This unit weighing approximately 700 pounds and carrying 400 pounds of the new agent is capable of being air-lifted by helicopter.

Cox Heads Southeastern

Chief Cosmo L. Cox, Durham, N. C. Fire Department was elected president of the Southeastern Association of Fire Chiefs during the annual meeting held May 18 and 19 at Durham. Other officers elected are: Chief C. A. Fisher, Orangeburg, S. C., first vice president; Chief W. S. McFadden, Wheeling, W. Va., second vice president; Chief G. W. Wyrick, Greensboro, N. C., secretary-treasurer, and Chief E. R. McDaniel, Lexington, Ky., director to the IAFC.

BUYERS' GUIDE

Directory of Equipment For Fire Departments

This special feature is provided for the guidance and convenience of fire officials and others concerned with the purchase of fire equipment. The companies listed comprise those whose products have recently been advertised in FIRE ENGINEERING and are thus now actively serving the fire protection field. For information on any type of equipment not listed, address Readers' Service Dept., FIRE ENGINEERING, 305 East 45th St., New York 17, N. Y.

Every effort is made to insure the completeness and accuracy of directory sections. However, this information is published as a service, and no guarantee against errors or omissions is expressed or inferred. Additions or corrections are invited at any time. Please address the publisher.

APPARATUS, MOTOR

APPARATUS

Ambulances

Christopher Co., The
Divco Truck Div., Divco-Wayne Corp.
Ford Div., Ford Motor Co.
Gerstenslager Co., The
Gold Crest Safety Equipment Corp.
Hess & Eisenhardt Co.
International Harvester Co., Motor Truck Div.
Miller-Meteor Motor Car Div., Divco-Wayne Corp.
National Coaches, Inc.
Sharpsville Steel Fabricators, Inc.
Superior Coach Corp.

Chassis

Approved Fire Equipment Co., Inc
Divco Truck Div., Divco-Wayne Corp.
Ford Div., Ford Motor Co.
FWD Corp.
GMC Truck & Coach Div.
International Harvester Co., Motor Truck Div.
Maxim Motor Co.
Pirsch, Peter, & Sons Co.
Ward La France Truck Corp.

Crash Trucks

American LaFrance, Div. Sterling Precision Corp.
Ansul Chemical Company
Approved Fire Equipment Co., Inc.
Boardman Co., The, Fire Apparatus Div.
Central Fire Truck Corp.
Christopher Co., The
Darley, W. S., & Co
Divco Truck Div., Divco-Wayne Corp.
Fire Fighter Truck Co.
Fire Master Corp.
Ford Div., Ford Motor Co.
FWD Corp.
Gold Crest Safety Equipment Corp.
H. & H. Truck Tank Co., Inc.
Halprin Supply Co.
Howe Fire Apparatus Co.
Maxim Motor Co.
Morysville Body Works, Inc.
Pirsch, Peter, & Sons Co.
Seagrave Corporation
Sharpsville Steel Fabricators, Inc.
Universal Fire Apparatus Corp.
Valley Fire Truck Co.
Ward La France Truck Corp.
Young Fire Equipment Corp.

Foam Trucks

American Fire Apparatus Co.
American LaFrance, Div. Sterling Precision Corp.
Approved Fire Equipment Co., Inc.
Boardman Co., The, Fire Apparatus Div.
Central Fire Truck Corp.
Christopher Co., The
Divco Truck Div., Divco-Wayne Corp.
Fire Fighter Truck Co.
Ford Div., Ford Motor Co.
FWD Corp.
H. & H. Truck Tank Co., Inc.
Howe Fire Apparatus Co.
Mack Trucks, Inc.
Maxim Motor Co.
National Foam System, Inc.
Seagrave Corporation
Sharpsville Steel Fabricators, Inc.
Universal Fire Apparatus Corp.
Ward La France Truck Corp.
Young Fire Equipment Corp.

Industrial Trucks (in Plant)

Ansul Chemical Company
Bean, John, Div., Food Machinery & Chemical Corp. (Self-Propelled & Stationary)
Boardman Co., The, Fire Apparatus Div.
Central Fire Truck Corp.
Christopher Co., The
Darley, W. S., & Co.
Divco Truck Div., Divco-Wayne Corp.
Ford Div., Ford Motor Co.
H. & H. Truck Tank Co., Inc.
Howe Fire Apparatus Co.
Morysville Body Works, Inc.
National Foam System, Inc.
Sharpsville Steel Fabricators, Inc.
Universal Fire Apparatus Corp.
Valley Fire Truck Co.
Ward La France Truck Corp.
Young Fire Equipment Corp.

Ladder Trucks, Aerial

American Fire Apparatus Co.
American LaFrance, Div. Sterling Precision Corp.
Approved Fire Equipment Co., Inc.
Bean, John, Div., Food Machinery & Chemical Corp.
Brumbaugh Body Co., Inc.
Central Fire Truck Corp.
Darley, W. S. & Co.
Fire Fighter Truck Co.
Ford Div., Ford Motor Co.
FWD Corp.
Holan Corp.
Howe Fire Apparatus Co.
Mack Trucks, Inc.
Maxim Motor Co.
Mobile Aerial Towers, Inc.
Pirsch, Peter, & Sons Co.
Seagrave Corporation
Sharpsville Steel Fabricators, Inc.
Ward La France Truck Corp.
Young Fire Equipment Corp.

Ladder Trucks, Service

American Fire Apparatus Co.
American LaFrance, Div. Sterling Precision Corp.
Brumbaugh Body Co., Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fire Master Corp.
Ford Div., Ford Motor Co.
FWD Corp.
Gold Crest Safety Equipment Corp.
H. & H. Truck Tank Co., Inc.
Halprin Supply Co.
Holan Corp.
Howe Fire Apparatus Co.
Mack Trucks, Inc.
Maxim Motor Co.
Pirsch, Peter, & Sons Co.
Seagrave Corporation
Sharpsville Steel Fabricators, Inc.
Universal Fire Apparatus Corp.
Valley Fire Truck Co.
Ward La France Truck Corp.
Young Fire Equipment Corp.

Pumpers And Hose Cars

American Fire Apparatus Co.
American LaFrance, Div. Sterling Precision Corp.
Approved Fire Equipment Co., Inc.
Bean, John, Div., Food Machinery & Chemical Corp.
Boardman Co., The, Fire Apparatus Div.
Brumbaugh Body Co., Inc.
Central Fire Truck Corp.
Christopher Co., The
Darley, W. S., & Co.
Fire Master Corp.
Ford Div., Ford Motor Co.
FWD Corp.
Gold Crest Safety Equipment Corp.
H. & H. Truck Tank Co., Inc.
Halprin Supply Co.
Howe Fire Apparatus Co.
Mack Trucks, Inc.
Maxim Motor Co.
Morysville Body Works, Inc.
Pirsch, Peter, & Sons Co.
Seagrave Corporation
Sharpsville Steel Fabricators, Inc.
Universal Fire Apparatus Corp.
Valley Fire Truck Co.
Ward La France Truck Corp.
Young Fire Equipment Corp.

Pumpers, High Pressure Fog

American Fire Apparatus Co.
American LaFrance, Div. Sterling Precision Corp.
Approved Fire Equipment Co., Inc.
Bean, John, Div., Food Machinery & Chemical Corp.
Boardman Co., The, Fire Apparatus Div.
Brumbaugh Body Co., Inc.
Central Fire Truck Corp.
Christopher Co., The
Darley, W. S., & Co.
Fire Fighter Truck Co.
Fire Master Corp.
Ford Div., Ford Motor Co.
FWD Corp.
H. & H. Truck Tank Co., Inc.
Halprin Supply Co.
Howe Fire Apparatus Co.
Mack Trucks, Inc.
Maxim Motor Co.
Pacific Marine Supply Co.
Pirsch, Peter, & Sons Co.
Seagrave Corporation
Sharpsville Steel Fabricators, Inc.
Universal Fire Apparatus Corp.
Ward La France Truck Corp.
Young Fire Equipment Corp.

Rescue and Squad Trucks

American Fire Apparatus Co
American LaFrance, Div. Sterling Precision Corp.
Approved Fire Equipment Co., Inc.
Bean, John, Div., Food Machinery & Chemical Corp.
Boardman Co., The, Fire Apparatus Div.
Brumbaugh Body Co., Inc.
Central Fire Truck Corp.
Christopher Co., The
Darley, W. S., & Co
Divco Truck Div., Divco-Wayne Corp.
Fire Fighter Truck Co.
Fire Master Corp.
Ford Div., Ford Motor Co.
FWD Corp.
Gerstenslager Co., The
Gold Crest Safety Equipment Corp.
H. & H. Truck Tank Co., Inc.
International Harvester Co., Motor Truck Div.
Mack Trucks, Inc.
Maxim Motor Co
Morysville Body Works, Inc.
Pirsch, Peter, & Sons Co.
Sharpsville Steel Fabricators, Inc.
Universal Fire Apparatus Corp.
Valley Fire Truck Co.
Ward La France Truck Corp.
Young Fire Equipment Corp.

Tank Trucks

American Fire Apparatus Co.
American LaFrance, Div. Sterling Precision Corp.
Approved Fire Equipment Co., Inc.
Boardman Co., The, Fire Apparatus Div.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fire Fighter Truck Co.
Fire Master Corp.
Ford Div., Ford Motor Co.
FWD Corp.
Gold Crest Safety Equipment Corp.
H. & H. Truck Tank Co., Inc.
Howe Fire Apparatus Co.
Maxim Motor Co.
National Foam System, Inc.
Sharpsville Steel Fabricators, Inc.
Universal Fire Apparatus Corp.
Ward La France Truck Corp.
Young Fire Equipment Corp.

Towers, Hydraulic

Holan Corp.
Mobile Aerial Towers, Inc.
Pitman Manufacturing Co.

Utility and Repair Trucks
Approved Fire Equipment Co., Inc.
Christopher Co., The
Darley, W. S., & Co.
Divco Truck Div., Divco Wayne Corp.
Ford Div., Ford Motor Co.
Gerstenslager Co., The
H. & H. Truck Tank Co., Inc.
International Harvester Co., Motor Truck Div.
Morysville Body Works, Inc.
Ward La France Truck Corp.
Young Fire Equipment Corp.

ALTERNATORS, AUTOMOTIVE
Delco-Remy Div., General Motors Corp.
Fire Fighter Truck Co.
Ford Div., Ford Motor Co.
Leece-Neville Co., The

BATTERIES APPARATUS
Delco-Remy Div., General Motors Corp.
Ford Div., Ford Motor Co.
Ray-O-Vac Co.
Russell Uniform Co.

BATTERY CHARGERS
Antrex Corp.
Darley, W. S., & Co.
Fire Fighter Truck Co.
Halprin Supply Co.
Russell Uniform Co.

BRAKE LOCK, HYDRAULIC
Power Equipment Co.

BRAKES, EMERGENCY, HYDRAULIC
Power Equipment Co.

BRAKES, POWER, HYDRAULIC
Fire Fighter Truck Co.
Ford Div., Ford Motor Co.
Power Equipment Co.

ENGINES (Diesel or Gas)
Detroit Diesel Engine Div., General Motors Corp.
Fairbanks, Morse & Co.
Fire Fighter Truck Co.
Ford Div., Ford Motor Co.
Hall-Scott (available through Hercules)
Hercules Motors Corp.
Mack Trucks, Inc.
Waukesha Motor Company

GENERATORS, AUTOMOTIVE
Darley, W. S., & Co.
Delco-Remy Div., General Motors Corp.
Fire Fighter Truck Co.
Ford Div., Ford Motor Co.
Katolight Corp.
Leece-Neville Co., The

HARDWARE FOR APPARATUS
Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Fyr-Fyter Co., The
H. & H. Truck Tank Co., Inc.
Halprin Supply Co.
Howe Fire Apparatus Co.
Russell Uniform Co.
Universal Fire Apparatus Corp.

HEATERS, ENGINE
Phillips Mfg. Co.

LADDERS, AERIAL
American LaFrance, Div. Sterling Precision Corp.
Brumbaugh Body Co., Inc.
Holan Corp.
Mack Trucks, Inc.
Maxim Motor Co.
Memco Aerial Ladder Co.
Pirsch, Peter, & Sons Co.
Seagrave Corporation

POWER STEERING, HYDRAULIC
Ford Div., Ford Motor Co.

SEAT BELTS
Bullard, E. D., Co.
Ford Div., Ford Motor Co.

SIGNS & EMBLEMS, APPARATUS
Darley, W. S., & Co.
Gold Crest Safety Equipment Corp.
Greenberg's, M., Sons
H. & H. Truck Tank Co., Inc.
Halprin Supply Co.
Kelco Supply Co.
Lane, E. B., Distributor (Plastic Emblems)
Maxim Motor Co.
National Trophy Sales, Inc.
Pacific Reflex Signs
Perma-Signs & Specialties
Russell Uniform Co.
Wentworth-Forman Co., Inc.

WARNING DEVICES, APPARATUS

Bells
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Darley, W. S., & Co.
Fire Fighter Truck Co.
H. & H. Truck Tank Co., Inc.
Halprin Supply Co.
Notifier Corp.
Russell Uniform Co.
Safa Alarm Div., Inc., Fyr-Fyter Co., The
Seagrave Corporation
Universal Fire Apparatus Corp.
Ward La France Truck Corp.
Young Fire Equipment Corp.

Flashers
Macchi & Company

Lights
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Carpenter Manufacturing Co.
Central Fire Truck Corp.
Darley, W. S., & Co.
Falcon Alarm Co., Inc.
Federal Sign & Signal Corp.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Kelco Supply Co.
Morysville Body Works, Inc.
North American Signal Co.
Portable Light Co., Inc., The
Russell Uniform Co.
Safa Alarm Div., Inc., Fyr-Fyter Co., The
Sireno Co., Inc., The
U-C Lite Manufacturing Co.
Ward La France Truck Corp.
Whelen Engineering Co., Inc.
Willson Products Div., Ray-O-Vac Co.

Sirens
American LaFrance, Div. Sterling Precision Corp.
Antrex Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Federal Sign & Signal Corp.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
Kelco Supply Co.
Macchi & Co. (Flashers for Sirens)
Morysville Body Works, Inc.
North American Signal Co.
Russell Uniform Co.
Safa Alarm Div., Inc., Fyr-Fyter Co., The
Sireno Co., Inc., The
Sterling Siren Fire Alarm Co., Inc.
Ward La France Truck Corp.

Whistles
Falcon Alarm Co., Inc.
Fire Fighter Truck Co.
Gamewell Company
Russell Uniform Co.
Safa Alarm Div., Inc., Fyr-Fyter Co., The

BOATS, FIRE

ENGINES, DIESEL OR GAS
Detroit Diesel Engine Div., General Motors Corp.
Hall-Scott (available through Hercules)
Hercules Motors Corp.
Waukesha Motor Company

OUTBOARD MOTORS
Pacific Marine Supply Co.

RADAR EQUIPMENT
Radio Corp. of America

CLOTHING

CLOTHING, PROTECTIVE

Aluminized, Insulated
American LaFrance, Div. Sterling Precision Corp.
Body Guard Mfg. Co.
Cairns & Bro., Inc.
Fyrepel Products, Inc.
Globe Manufacturing Co.
Halprin Supply Co.
Janesville Apparel Co.
Midwestern Safety Mfg. Co.
Mine Safety Appliances Company
Minnesota Mining & Mfg. Co. (Fabrics)
Morning Pride Mfg. Co.
Russell Uniform Co.
Wheeler Protective Apparel, Inc.

Asbestos
American LaFrance, Div. Sterling Precision Corp.
Cairns & Bro., Inc.
Darley, W. S., & Co.
Globe Manufacturing Co.
Halprin Supply Co.
Mine Safety Appliances Company
Russell Uniform Co.
Snyder, M. L., & Son, Inc.
Wheeler Protective Apparel, Inc.

Belts and Suspenders
Cairns & Bro., Inc.
Darley, W. S., & Co.
Globe Manufacturing Co.
Mine Safety Appliances Company
Russell Uniform Co.

Boots
American LaFrance, Div. Sterling Precision Corp.
Beacon Falls Rubber Footwear
Body Guard Mfg. Co.
Cairns & Bro., Inc.
Darley, W. S., & Co.
Eureka Fire Hose Div., U. S. Rubber Co.
Fyr-Fyter Co., The
Goodall Rubber Co.
Goodrich, B. F., Industrial Products Co.
Halprin Supply Co.
Janesville Apparel Co.
Midwestern Safety Mfg. Co.
Mine Safety Appliances Company
Russell Uniform Co.
Snyder, M. L., & Son, Inc.
Wheeler Protective Apparel, Inc.

Gloves
American LaFrance, Div. Sterling Precision Corp.
Cairns & Bro., Inc.
Darley, W. S., & Co.
Fyrepel Products, Inc.
Fyr-Fyter Co., The
Goodrich, B. F., Industrial Products Co.
Halprin Supply Co.
Midwestern Safety Mfg. Co.
Mine Safety Appliances Company
Russell Uniform Co.
Schneck Textile Fibre Co.
Snyder, M. L., & Son, Inc.
Wheeler Protective Apparel, Inc.

Goggles
American LaFrance, Div. Sterling Precision Corp.
Cairns & Bro., Inc.
Mine Safety Appliances Company
Russell Uniform Co.
Willson Products Div., Ray-O-Vac Co.

Hats
American LaFrance, Div. Sterling Precision Corp.
Bullard, E. D., Co.
Cairns & Bro., Inc.
Goodall Rubber Co.
Goodrich, B. F., Industrial Products Co.
Halprin Supply Co.
Midwestern Safety Mfg. Co.
Mine Safety Appliances Company
Reese, S. H.
Russell Uniform Co.
Snyder, M. L., & Son, Inc.

Helmets
American LaFrance, Div. Sterling Precision Corp.
Bullard, E. D., Co.
Cairns & Bro., Inc.
Darley, W. S., & Co.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Midwestern Safety Mfg. Co.
Mine Safety Appliances Company
Russell Uniform Co.
Wheeler Protective Apparel, Inc.

Innersoles
American LaFrance, Div. Sterling Precision Corp.
Body Guard Mfg. Co.
Bullard, E. D., Co.
Darley, W. S., & Co.
Goodall Rubber Co.
Halprin Supply Co.
Janesville Apparel Co.
Mine Safety Appliances Company
Russell Uniform Co.
Schneck Textile Fibre Co.

Rubber & Canvas Coats
American LaFrance, Div. Sterling Precision Corp.
Beacon Falls Rubber Footwear
Cairns & Bro., Inc.
Darley, W. S., & Co.
Eureka Fire Hose Div., U. S. Rubber Co. (canvas)
Globe Manufacturing Co. (canvas)
Goodall Rubber Co.
Goodrich, B. F., Industrial Products Co.
Halprin Supply Co.
Janesville Apparel Co.
Midwestern Safety Mfg. Co.
Mine Safety Appliances Company
Morning Pride Mfg. Co.
Russell Uniform Co.
Schneck Textile Fibre Co.
Snyder, M. L., & Son, Inc.

Suits, Quick Hitch
American LaFrance, Div. Sterling Precision Corp.
Body Guard Mfg. Co.
Cairns & Bro., Inc.
Darley, W. S., & Co.
Fyr-Fyter Co., The
Globe Manufacturing Co.
Halprin Supply Co.
Janesville Apparel Co.
Midwestern Safety Mfg. Co.
Mine Safety Appliances Company
Morning Pride Mfg. Co.
Russell Uniform Co.

MATERIAL (UNIFORM)
Fire Fighter Truck Co.
Mount Vernon Mills, Inc.
Russell Uniform Co.

WEARING APPAREL, DRESS

Hats and Caps, Uniform
Cairns & Bro., Inc.
Darley, W. S., & Co.
Fire Fighter Truck Co.
Halprin Supply Co.
Reese, S. H. (Caps)
Russell Uniform Co.
Wentworth-Forman Co., Inc.

Shirts, Uniform
Cairns & Bro., Inc.
Darley, W. S., & Co.
Russell Uniform Co.

Uniforms
Cairns & Bro., Inc.
Darley, W. S., & Co.
Fire Fighter Truck Co.
Russell Uniform Co.

Woolen Socks and Mitts
Russell Uniform Co.

COMMUNICATIONS

ALARM SYSTEMS

Alerting
American District Telegraph Co.
Antrex Corp.
Electronics Div., Hobby Enterprises, Inc.
Falcon Alarm Co., Inc.
Federal Sign & Signal Corp.
Gamewell Company
Hobby Enterprises, Inc.
Notifier Corp.
Plectron Corp.
Safa Alarm Div., Inc., Fyr-Fyter Co., The

Automatic
American District Telegraph Co.
Falcon Alarm Co., Inc.
Fyr-Fyter Co., The
Gamewell Company
Grinnell Co., Inc.
Halprin Supply Co.
Kidde Ultrasonic & Detection Alarms, Inc., Subs. Walter Kidde & Co., Inc.
Notifier Corp.
Russell Uniform Co.
Safa Alarm Div., Fyr-Fyter Co., The

Batteries
Antrex Corp.
Gamewell Company
Safa Alarm Div., Inc., Fyr-Fyter Co., The

Boxes
American District Telegraph Co.
Fyr-Fyter Co., The
Gamewell Company
Safa Alarm Div., Inc., Fyr-Fyter Co., The

Cable
Gamewell Company
Safa Alarm Div., Inc., Fyr-Fyter Co., The

Central Station
American District Telegraph Co.
Fyr-Fyter Co., The
Gamewell Company
Notifier Corp.
Safa Alarm Div., Inc., Fyr-Fyter Co., The

Home
Falcon Alarm Co., Inc.
Gamewell Company
Halprin Supply Co.
Industrial Radio Corp.
Kidde Ultrasonic & Detection Alarms, Inc., Subs. Walter Kidde & Co., Inc.
Notifier Corp.
Safa Alarm Div., Inc., Fyr-Fyter Co., The

Industrial
American District Telegraph Co.
Antrex Corp.
Falcon Alarm Co., Inc.
Federal Sign & Signal Corp.
Fyr-Fyter Co., The
Gamewell Company
Halprin Supply Co.
Kidde Ultrasonic & Detection Alarms, Inc., Subs. Walter Kidde & Co., Inc.
Notifier Corp.
Pacific Marine Supply Co.
Safa Alarm Div., Inc., Fyr-Fyter Co., The

Institutional
American District Telegraph Co.
Antrex Corp.
Falcon Alarm Co., Inc.
Federal Sign & Signal Corp.
Fyr-Fyter Co., The
Gamewell Company
Halprin Supply Co.
Kidde Ultrasonic & Detection Alarms, Inc., Subs. Walter Kidde & Co., Inc.
Notifier Corp.
Safa Alarm Div., Inc., Fyr-Fyter Co., The

Municipal
American District Telegraph Co.
Falcon Alarm Co., Inc.
Federal Sign & Signal Corp.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Gamewell Company
Notifier Corp.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Safa Alarm Div., Inc., Fyr-Fyter Co., The

Radio
Electronics Div., Hobby Enterprises, Inc.
General Electric Co., Communication Products Dept.
Hobby Enterprises, Inc.
Industrial Radio Corp.
Monitoradio Div., I. D. E. A., Inc.
Motorola Communications & Electronics, Inc.
Plectron Corp.
Radio Corp. of America

Recording Systems
American District Telegraph Co.
Antrex Corp.
Dictaphone Corporation
Gamewell Company
Notifier Corp.
Safa Alarm Div., Inc., Fyr-Fyter Co., The
Soundscriber Corp., The

Sirens, Air Horns, Whistles & Coders
American District Telegraph Co.
American LaFrance, Div. Sterling Precision Corp.
Antrex Corp.
Darley, W. S., & Co.
Falcon Alarm Co., Inc.
Federal Sign & Signal Corp.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Gamewell Company
Hadley Mfg. Co.
Halprin Supply Co.
Howe Fire Apparatus Co.
Morysville Body Works, Inc.
North American Signal Co.
Notifier Corp.
Russell Uniform Co.
Safa Alarm Div., Inc., Fyr-Fyter Co., The
Sireno Co., Inc., The
Sterling Siren Fire Alarm Co., Inc.

Smoke
American District Telegraph Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Kidde, Walter, & Co., Inc.
Morysville Body Works, Inc.
Pacific Marine Supply Co.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Safa Alarm Div., Inc., Fyr-Fyter Co., The

Tape Systems
Gamewell Company
Notifier Corp.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Safa Alarm Div., Inc., Fyr-Fyter Co., The

Watch Tour Systems
American District Telegraph Co.
Gamewell Company
Notifier Corp.

LOUD SPEAKERS

Aerial Ladder Intercom
Fi-Tronics Engineering, Inc.

Electronic Megaphones
American LaFrance, Div. Sterling Precision Corp.
Antrex Corp.
Audio Equipment Co., Inc.
B & G Incorporated
Darley, W. S., & Co.
Falcon Alarm Co., Inc.
Fire Fighter Truck Co.
Halprin Supply Co.
Morysville Body Works, Inc.
Pye Corp. of America
Radio Corp. of America
Russell Uniform Co.
University Loudspeakers Inc.
Wheeler Protective Apparel, Inc.

Public Address Systems
Antrex Corp.
Audio Equipment Co., Inc.
B & G Incorporated
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Morysville Body Works, Inc.
Safa Alarm Div., Inc., Fyr-Fyter Co., The
University Loudspeakers Inc.
Wheeler Protective Apparel, Inc.

RADIO

Mobile and Station
Antrex Corp.
General Electric Co., Inc., Communication Products Dept.
Motorola Communications & Electronics, Inc.
Radio Corp. of America

Portable
Antrex Corp.
General Electric Co., Inc., Communication Products Dept.
Industrial Radio Corp.
Motorola Communications & Electronics, Inc.
Radio Corp. of America

Receivers
Antrex Corp. (Helmet Receivers)
Electronics Div., Hobby Enterprises, Inc.
Harron Labs
Industrial Radio Corp.
Monitoradio Div., I. D. E. A., Inc.
Motorola Communications & Electronics, Inc.
Plectron Corp.
Radio Corp. of America

TELEPHONE-EMERGENCY
Antrex Corp.
Gamewell Company

TRAFFIC CONTROL EQUIPMENT
Audio Equipment Co., Inc.
Darley, W. S., & Co.
Eagle Signal Corp.
Falcon Alarm Co., Inc.
Kelco Supply Co.
Motorola Communications & Electronics, Inc.
Russell Uniform Co.

EXTINGUISHERS

EXTINGUISHERS

Carbon Dioxide
American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
Kelco Supply Co.
Kidde, Walter, & Co., Inc.
Morysville Body Works, Inc.
Pacific Marine Supply Co.
Pyrene C-O-Two Div., Fyr-Fyter Co., The
Russell Uniform Co.
Snyder, M. L., & Son, Inc.

Chimney Fire
American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Kelco Supply Co.
Morysville Body Works, Inc.
Pacific Marine Supply Co.
Russell Uniform Co.
Snyder, M. L., & Son, Inc.

Dry Chemical
American LaFrance, Div. Sterling Precision Corp.
Ansul Chemical Company
Central Fire Truck Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fire Fighter Truck Co.
Ford Div., Ford Motor Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
Kelco Supply Co.
Kidde, Walter, & Co., Inc.
Morysville Body Works, Inc.
Pacific Marine Supply Co.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Russell Uniform Co.
Snyder, M. L., & Son, Inc.

Foam
American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
Kelco Supply Co.
Kidde, Walter, & Co., Inc.
Morysville Body Works, Inc.
National Foam System, Inc.
Pacific Marine Supply Co.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Russell Uniform Co.
Snyder, M. L., & Son, Inc.

Metal, Fire
Ansul Chemical Company

Pressurized Water
American LaFrance, Div. Sterling Precision Corp.
Ansul Chemical Company
Central Fire Truck Corp.
Deynor Corp.
Elkhart Brass Mfg. Co., Inc.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
Kelco Supply Co.
Kidde, Walter, & Co., Inc.
Morysville Body Works, Inc.
Pacific Marine Supply Co.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Russell Uniform Co.
Snyder, M. L., & Son, Inc.

Soda & Acid
American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co., inc.
Elkhart Brass Mfg. Co., Inc.
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
Kelco Supply Co.
Kidde, Walter, & Co., Inc.
Morysville Body Works, Inc.
National Foam System, Inc.
Pacific Marine Supply Co.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Russell Uniform Co.
Snyder, M. L., & Son, Inc.

Vaporizing Liquid
American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fire Fighter Truck Co.
Firetox System, Inc.
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
Kelco Supply Co.
Kidde, Walter, & Co., Inc.
Morysville Body Works, Inc.
National Foam System, Inc.
Pacific Marine Supply Co.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Russell Uniform Co.
Snyder, M. L., & Son, Inc.

Water
American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Champion Sprayer Co.
Darley, W. S., & Co.
Deynor Corp.
Elkhart Brass Mfg. Co., Inc.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
Kelco Supply Co.
Kidde, Walter, & Co., Inc.
Morysville Body Works, Inc.
Parco Products Co.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Russell Uniform Co.
Smith, D. B., & Co., Inc.
Snyder, M. L., & Son, Inc.

EXTINGUISHING SYSTEMS

Automatic Sprinkler Supervision
Grinnell Co., Inc.
Morysville Body Works, Inc.

Carbon Dioxide
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Grinnell Co., Inc.
Kidde, Walter, & Co., Inc.
Morysville Body Works, Inc.
Pacific Marine Supply Co.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The

Dry Chemical
Ansul Chemical Company
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Grinnell Co., Inc.
Morysville Body Works, Inc.
Pacific Marine Supply Co.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The

Foam
American LaFrance, Div. Sterling Precision Corp.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Grinnell Co., Inc.
Halprin Supply Co.
Morysville Body Works, Inc.
National Foam System, Inc.
Pacific Marine Supply Co.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Snyder, M. L., & Son, Inc.

Water (Sprinkler)
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Greenberg's, M., Sons
Grinnell Co., Inc.
Morysville Body Works, Inc.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The

Other
Deynor Corp.
Fire Fighter Truck Co.
Firetox System, Inc.
Morysville Body Works, Inc.
Russell Uniform Co.

EXTINGUISHING AGENTS

Foam-Chemical-Liquid
Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
Kidde, Walter, & Co., Inc.
Morysville Body Works, Inc.
National Foam System, Inc.
Pacific Marine Supply Co.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Rockwood Sprinkler Company
Russell Uniform Co.
Snyder, M. L., & Son, Inc.

Metal, Fire
Ansul Chemical Company

Wetting Agents
Akron Brass Mfg. Co., Inc. (Unox)
American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Deynor Corp.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
Morysville Body Works, Inc.
National Foam System, Inc.
Professional Fire Chemical Co.
Rockwood Sprinkler Company
Russell Uniform Co.
Snyder, M. L., & Son, Inc.
Stevens, S. G. Co.

FIRE DEPARTMENT APPLIANCES & SUPPLIES

BADGES, INSIGNIA, ETC.
American LaFrance, Div. Sterling Precision Corp.
Blackinton, V. H., & Co., Inc.
Braxmar, C. G., Co., Inc., The
Cairns & Bro., Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Everson-Ross Co., Inc.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Gold Crest Safety Equipment Corp.
Halprin Supply Co.
Lane, E. B.
National Trophy Sales, Inc.
Nielsen-Rionda, Inc.
Perma-Signs & Specialties
Reese, S. H.
Russell Uniform Co.
Wentworth-Forman Co., Inc.

BLANKETS, FIRE
American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fire Fighter Truck Co.
Fyrepel Products, Inc. (Aluminized, Insulated)
Fyr-Fyter Co., The
Halprin Supply Co.
Mine Safety Appliances Company
Russell Uniform Co.
Wheeler Protective Apparel, Inc.

BROOMS, FIRE FIGHTING
American LaFrance, Div. Sterling Precision Corp.
Brooklyn Fibre Broom Co., Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Mason-Worcester Brush Co.
Pertex
Russell Uniform Co.

BROOMS, SAFETY, NON SPARKING
American LaFrance, Div. Sterling Precision Corp.
Brooklyn Fibre Broom Co., Inc.
Central Fire Truck Corp.
Fire Fighter Truck Co.
Pertex
Russell Uniform Co.

EJECTORS AND EXHAUSTERS, SMOKE
American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Mine Safety Appliances Company
Mountain States Equipment Co.
Russell Uniform Co.
Super Vacuum Mfg Co., Inc.
Wooster Brass Div., Fyr-Fyter Co., The

FIRE ESCAPES

Permanent
American LaFrance, Div. Sterling Precision Corp.
Potter Fire Escape Co.

Portable
American LaFrance, Div. Sterling Precision Corp.
Snyder, M. L., & Son, Inc.

FOAM GENERATORS OR PUMPS
Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Gorman-Rupp Co.
Hale Fire Pump Co.
Halprin Supply Co.
National Foam System, Inc.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Russell Uniform Co.
Universal Fire Apparatus Corp.
Young Fire Equipment Corp.

FOAM, TRAILER
Akron Brass Mfg. Co., Inc.

FUND RAISING DEVICES
Coin Savers
Falcon Alarm Co., Inc.
Gold Medal Products Co.
Hanford-Brown Co.

GAS DETECTORS
American LaFrance, Div. Sterling Precision Corp.
Mine Safety Appliances Company

GAUGES

Brake Line, Pressure
Power Equipment Co.

Compound
American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fire Fighter Truck Co.
Halprin Supply Co.
Universal Fire Apparatus Corp.
Ward La France Truck Corp.
Wooster Brass Div., Fyr-Fyter Co., The

Computers, Pressure
A & W Specialty Co.

Piezometers
Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fire Fighter Truck Co.
Halprin Supply Co.
Universal Fire Apparatus Corp.
Wooster Brass Div., Fyr-Fyter Co., The

Pressure
Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fire Fighter Truck Co.
Halprin Supply Co.
Universal Fire Apparatus Corp.
Ward La France Truck Corp.
Wooster Brass Div., Fyr-Fyter Co., The

Testing
Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fire Fighter Truck Co.
Halprin Supply Co.
Universal Fire Apparatus Corp.
Wooster Brass Div., Fyr-Fyter Co., The

GENERAL FIRE DEPT. SUPPLIES
Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Approved Fire Equipment Co., Inc.
Cairns & Bro., Inc.
Fyr-Fyter Co., The
Gold Crest Safety Equipment Corp.
Halprin Supply Co.
Howe Fire Apparatus Co.
Oxygen Equipment & Service Co.
Russell Uniform Co.
Snyder, M. L., & Son, Inc.
Universal Fire Apparatus Corp.

HEAT SHIELD
Fyrepel Products, Inc.

LADDERS
Aerial
Memco Aerial Ladder Co.

Fiberglass
Aluminum Ladder Co.
Russell Uniform Co.

Metal
Aluminum Ladder Co. (Aluminum)
American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Duo-Safety Ladder Corp. (Aluminum)
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
Pirsch, Peter, & Sons Co. (Aluminum)
Russell Uniform Co.

Rope
Fire Fighter Truck Co.
Halprin Supply Co.

Wood
American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Duo-Safety Ladder Corp.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
Maxim Motor Co.
Pirsch, Peter, & Sons Co.
Seagrave Corporation
Stephenson Corporation

LIFE BELTS
American LaFrance, Div. Sterling Precision Corp.
Atlas Safety Equipment Co., Inc.
Darley, W. S., Inc.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Russell Uniform Co.
Wooster Brass Div., Fyr-Fyter Co., The

LIFE GUNS
American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Halprin Supply Co.
Naval Co.
Pacific Marine Supply Co.
Russell Uniform Co.

NETS, LIFE AND TRAINING
American LaFrance, Div. Sterling Precision Corp.
Atlas Safety Equipment Company, Inc.
Darley, W. S., & Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Russell Uniform Co.

PHOTOGRAPHIC EQUIPMENT
Graflex, Inc., Subs. General Precision Equipment Corp.
Russell Uniform Co.

PROPORTIONERS AND EDUCTORS
Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Deynor Corp.
Fire Fighter Truck Co.
Hale Fire Pump Co. (Foam)
Halprin Supply Co.
Howe Fire Apparatus Co.
National Foam System, Inc.
Rockwood Sprinkler Company
Russell Uniform Co.

RECORD BOOKS, DEPARTMENT
Cairns & Bro., Inc.

REFLECTIVE SIGNS AND MATERIALS
Flex-O-Lite Mfg. Corp.

RUST PREVENTATIVES
Dakota Chemical Co.
Halprin Supply Co.
Stevens, S. G. Co.

SALVAGE COVERS
American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Fire Fighter Truck Co.
Fyrepel Products, Inc.
Fyr-Fyter Co., The
Halprin Supply Co.
Hoosier Tarpaulin & Canvas Goods Co., Inc. (Nylon or Canvas)
Russell Uniform Co.
Snyder, M. L., & Son, Inc.
Wheeler Protective Apparel, Inc.

SEARCH AND RESCUE EQUIPMENT
American LaFrance, Div. Sterling Precision Corp.
Antrex Corp.
Fyrepel Products, Inc.
Halprin Supply Co.
Kelco Supply Co.
Porter, H. K., Inc.
Russell Uniform Co.

SLIDING POLES, FIRE STATION
Greenberg's, M., Sons
McIntire, F. N., Brass Works, Inc.

SMOKE & ODOR REMOVERS
Mine Safety Appliances Company
Mountain States Equipment Co.
Russell Uniform Co.
Super Vacuum Mfg. Co., Inc.

SMOKE BOMBS
Acme Protection Equipment Co.
American LaFrance, Div. Sterling Precision Corp.
Halprin Supply Co.
Superior Signal Co., Inc.

TEXTBOOKS
Long's College Book

THAWING EQUIPMENT, HYDRANT
American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Universal Fire Apparatus Corp.

THREAD CUTTING EQUIPMENT
Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Halprin Supply Corp.
Wooster Brass Div., Fyr-Fyter Co., The

TRAINING AIDS
A & W Specialty Co.
Antrex Corp.
Delehanty Correspondence School
Graflex, Inc., Subs. General Precision Equipment Corp.
Investigations Institute
Superior Signal Co., Inc.

TRAINING TOWERS
Atlas Safety Equipment Co., Inc.

TROPHIES & PLAQUES
Blackinton, V. H., & Co., Inc.
Cairns & Bro., Inc.
Greenberg's, M., Sons
International Bronze Tablet Co., Inc.
National Trophy Sales, Inc.
Russell Uniform Co.

VENTILATING EQUIPMENT
Mine Safety Appliances Company
Mountain States Equipment Co.
Russell Uniform Co.
Super Vacuum Mfg. Co., Inc.

WATER TANKS, PORTABLE CANVAS
American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co
Fire Fighter Truck Co.
Fol-Da-Tank Co.
Halprin Supply Co.
Pacific Marine Supply Co.
Russell Uniform Co.

FIRE PREVENTION

CHIMNEY BRUSHES
Mason-Worcester Brush Co.

FIRE RETARDANT MATERIALS
Paint, Etc.
American Vamag Co., Inc.
Builders Research & Chemical Co.
Fire Fighter Truck Co.
Flex-O-Lite Mfg. Corp.

Safety Equipment for Flammable Liquids
Darley, W. S., & Co.
Falcon Alarm Co., Inc.
Fyrepel Products, Inc.
Halprin Supply Co.

FIRST AID EQUIPMENT

AMBULANCE COTS
Bomgardner Mfg. Co., The
Fire Fighter Truck Co.
Halprin Supply Co.
Kelco Supply Co.
Mine Safety Appliances Company
National Coaches, Inc.
Russell Uniform Co.
Washington Products Co.

BURN TREATMENT
American LaFrance, Div. Sterling Precision Corp.
Bullard, E. D., Co.
Fire Fighter Truck Co.
Halprin Supply Co.
Kelco Supply Co.
Medical Supply Co.
Mine Safety Appliances Company
Pac-Kit Co., The
Russell Uniform Co.

FIRST AID KITS
American LaFrance, Div. Sterling Precision Corp.
Bullard, E. D., Co.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Kelco Supply Co.
Medical Supply Co.
Mine Safety Appliances Company
Pac-Kit Co., The
Russell Uniform Co.

PROTECTIVE BREATHING & REVIVING APPARATUS
Air Breathing Equipment
Acme Protection Equipment Co.
American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fire Fighter Truck Co.
Fyr-Fyter Co., The, Fyr-Fyter Div.
Globe Industries, Inc., Medical & Hospital Dept.
Halprin Supply Co.
Howe Fire Apparatus Co.
Kelco Supply Co.
Mine Safety Appliances Company
National Coaches, Inc.
Russell Uniform Co.
Scott Aviation Corp.
Stephenson Corporation
Wheeler Protective Apparel, Inc.

Air Compressors
Cornelius Co., The
Fire Fighter Truck Co.

Aspirators
American LaFrance, Div. Sterling Precision Corp.
Bomgardner Mfg. Co., The
Central Fire Truck Corp.
Darley, W. S., & Co.
Emerson, J. H., Co.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Globe Industries, Inc., Medical & Hospital Dept.
Halprin Supply Co.
Kelco Supply Co.
Mine Safety Appliances Company
Oxygen Equipment & Service Co.
Russell Uniform Co.

Inhalators
American LaFrance, Div. Sterling Precision Corp.
Bomgardner Mfg. Co., The
Central Fire Truck Corp.
Darley, W. S., & Co.
Emerson, J. H., Co.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Globe Industries, Inc., Medical & Hospital Dept.
Halprin Supply Co.
Kelco Supply Co.
Mine Safety Appliances Company
National Coaches, Inc.
Oxygen Equipment & Service Co.
Russell Uniform Co.
Scott Aviation Corp.
Stephenson Corporation

Masks

Acme Protection Equipment Co.
American LaFrance, Div. Sterling Precision Corp.
Bomgardner Mfg. Co., The
Bullard, E. D., Co.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Globe Industries, Inc., Medical & Hospital Dept.
Halprin Supply Co.
Kelco Supply Co.
Mine Safety Appliances Company
Oxygen Equipment & Service Co.
Russell Uniform Co.
Scott Aviation Corp.
Willson Products Div., Ray-O-Vac Co.

Oxygen Breathing Equipment

American LaFrance, Div. Sterling Precision Corp.
Bomgardner Mfg. Co., The
Central Fire Truck Corp.
Darley, W. S., & Co.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Globe Industries, Inc., Medical & Hospital Dept.
Halprin Supply Co.
Howe Fire Apparatus Co.
Kelco Supply Co.
Mine Safety Appliances Company
Oxygen Equipment & Service Co.
Rose Aviation, Inc.
Russell Uniform Co.
Stephenson Corporation

Respirators

Acme Protection Equipment Co.
American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Emerson, J. H., Co.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Globe Industries, Inc., Medical & Hospital Dept.
Halprin Supply Co.
Kelco Supply Co.
Mine Safety Appliances Company
Oxygen Equipment & Service Co.
Russell Uniform Co.
Scott Aviation Corp.
Western Anesthesia Equipment Co., Inc.
Willson Products Div., Ray-O-Vac Co.

Resuscitators

American LaFrance, Div. Sterling Precision Corp.
Batrow Laboratories, Inc.
Bomgardner Mfg. Co., The
Central Fire Truck Corp.
Darley, W. S., & Co.
Emerson, J. H., Co.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Globe Industries, Inc., Medical & Hospital Dept.
Halprin Supply Co.
Howe Fire Apparatus Co.
Kelco Supply Co.
Medical Supply Co.
Mine Safety Appliances Company
National Coaches, Inc.
Oxygen Equipment & Service Co.
Russell Uniform Co.
Stephenson Corporation

UNDERWATER

Rose Aviation, Inc.
Scott Aviation Corp.

SPLINTS

Fire Fighter Truck Co.
Kelco Supply Co.
Medical Supply Co.
Mine Safety Appliances Company
Orthopedic Frame Co.
Russell Uniform Co.

STRETCHERS

American LaFrance, Div. Sterling Precision Corp.
Bomgardner Mfg. Co., The
Bullard, E. D., Co.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fire Fighter Truck Co.
Halprin Supply Co.
Kelco Supply Co.
Medical Supply Co.
Mine Safety Appliances Company
National Coaches, Inc.
Russell Uniform Co.
Washington Products Co.

HOSE, HOSE FITTINGS & HOSE STREAM APPLIANCES

HOSE, CHEMICAL & BOOSTER

Acme-Hamilton Mfg. Corp.
American LaFrance, Div. Sterling Precision Corp.
American Rubber Mfg. Co., The
Approved Fire Equipment Co., Inc.
Bi-Lateral Fire Hose Co.
Boston Woven Hose & Rubber Co., Div. American Biltrite Rubber Co., Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Eureka Fire Hose Div., U. S. Rubber Co.
Fabric Fire Hose Co.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Goodall Rubber Co.
Goodrich, B. F., Industrial Products Co.
Halprin Supply Co.
Hewitt-Robins, Inc.
Howe Fire Apparatus Co.
McIntire, F. N., Brass Works, Inc.
Morysville Body Works, Inc.
Quaker Rubber Div., H. K. Porter Co., Inc.
Pacific Marine Supply Co.
Republic Rubber Division, Lee Rubber & Tire Corp.
Russell Uniform Co.
Snyder, M. L., & Son, Inc.
United States Rubber Co.
Universal Fire Apparatus Corp.
Ward La France Truck Corp.

HOSE COTTON, R. L.

Acme-Hamilton Mfg. Corp.
American LaFrance, Div. Sterling Precision Corp.
American Rubber Mfg. Co., The
Approved Fire Equipment Co., Inc.
Bi-Lateral Fire Hose Co.
Boston Woven Hose & Rubber Co., Div. American Biltrite Rubber Co., Inc.
Central Fire Truck Corp.
Fabric Fire Hose Co.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Goodall Rubber Co.
Goodrich, B. F., Industrial Products Co.
Halprin Supply Co.
Hewitt-Robins, Inc.
McIntire, F. N., Brass Works, Inc.
Morysville Body Works, Inc.
Pacific Marine Supply Co.
Quaker Rubber Div., H. K. Porter Co., Inc.
Republic Rubber Div., Lee Rubber & Tire Corp.
Russell Uniform Co.
Snyder, M. L., & Son, Inc.
Universal Fire Apparatus Corp.
Ward La France Truck Corp.

HOSE FORESTRY

Acme-Hamilton Mfg. Corp.
American LaFrance, Div. Sterling Precision Corp.
American Rubber Mfg. Co., The
Approved Fire Equipment Co., Inc.
Bi-Lateral Fire Hose Co.
Blaze Guard Mfg. Co.
Boston Woven Hose & Rubber Co., Div., American Biltrite Rubber Co., The
Central Fire Truck Corp.
Darley, W. S., & Co.
Eureka Fire Hose Div., U. S. Rubber Co.
Fabric Fire Hose Co.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Goodall Rubber Co.
Goodrich, B. F., Industrial Products Co.
Halprin Supply Co.
Hewitt-Robins, Inc.
McIntire, F. N., Brass Works, Inc.
Morysville Body Works, Inc.
Pacific Marine Supply Co.
Quaker Rubber Div., H. K. Porter Co., Inc.
Republic Rubber Division, Lee Rubber & Tire Corp.
Russell Uniform Co.
Universal Fire Apparatus Corp.

HOSE, HIGH PRESSURE

Acme-Hamilton Mfg. Corp.
American LaFrance, Div. Sterling Precision Corp.
American Rubber Mfg. Co., The
Approved Fire Equipment Co., Inc.
Bean, John, Div., Food Machinery & Chemical Corp.
Bi-Lateral Fire Hose Co.
Blaze Guard Mfg. Co.
Boston Woven Hose & Rubber Co., Div., American Biltrite Rubber Co., Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Eureka Fire Hose Div., U. S. Rubber Co.
Fabric Fire Hose Co.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Goodall Rubber Co.
Goodrich, B. F., Industrial Products Co.
Halprin Supply Co.
Hewitt-Robins, Inc.
Howe Fire Apparatus Co.
McIntire, F. N., Brass Works, Inc.
Morysville Body Works, Inc.
Pacific Marine Supply Co.
Quaker Rubber Div., H. K. Porter Co., Inc.
Republic Rubber Division, Lee Rubber & Tire Corp.
Russell Uniform Co.
Snyder, M. L., & Son, Inc.
United States Rubber Co.
Universal Fire Apparatus Corp.

HOSE, RUBBER LINED

Acme-Hamilton Mfg. Corp.
American LaFrance, Div. Sterling Precision Corp.
American Rubber Mfg. Co., The
Approved Fire Equipment Co., Inc.
Bi-Lateral Fire Hose Co.
Blaze Guard Mfg. Co.
Boston Woven Hose & Rubber Co., Div., American Biltrite Rubber Co., Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Eureka Fire Hose Div., U. S. Rubber Co.
Fabric Fire Hose Co.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Goodall Rubber Co.
Goodrich, B. F., Industrial Products Co.
Halprin Supply Co.
Hewitt-Robins Inc.
Howe Fire Apparatus Co.
McIntire, F. N., Brass Works, Inc.
Morysville Body Works, Inc.
Pacific Marine Supply Co.
Quaker Rubber Div., H. K. Porter Co., Inc.
Republic Rubber Division, Lee Rubber & Tire Corp.
Russell Uniform Co.
Snyder, M. L., & Son, Inc.
United States Rubber Co.
Universal Fire Apparatus Corp.

HOSE SUCTION

Acme-Hamilton Mfg. Corp.
American LaFrance, Div. Sterling Precision Corp.
American Rubber Mfg. Co., The
Approved Fire Equipment Co., Inc.
Bi-Lateral Fire Hose Co.
Boston Woven Hose & Rubber Co., Div., American Biltrite Rubber Co., Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Eureka Fire Hose Div., U. S. Rubber Co.
Fabric Fire Hose Co.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Goodall Rubber Co.
Goodrich, B. F., Industrial Products Co.
Hale Fire Pump Co.
Halprin Supply Co.
Hewitt-Robins Inc.
Howe Fire Apparatus Co.
McIntire, F. N., Brass Works, Inc.
Morysville Body Works, Inc.
Pacific Marine Supply Co.
Quaker Rubber Div., H. K. Porter Co., Inc.
Republic Rubber Division, Lee Rubber & Tire Corp.
Russell Uniform Co.
United States Rubber Co.
Universal Fire Apparatus Corp.
Ward La France Truck Corp.

HOSE APPLIANCES

Holders

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fyr-Fyter Co., The
Halprin Supply Co.
Morysville Body Works, Inc.
Russell Uniform Co.
Snyder, M. L., & Son, Inc.
Wooster Brass Div., Fyr-Fyter Co., The

Hydrant Gates

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Eastman, Samuel, Co., Inc.
Elkhart Brass Mfg. Co., Inc.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Greenberg's, M., Sons
Halprin Supply Co.
McIntire, F. N., Brass Works, Inc.
Morysville Body Works, Inc.
Powhatan Brass & Iron Works
Russell Uniform Co.
Universal Fire Apparatus Corp.
Wooster Brass Div., Fyr-Fyter Co., The

Increasers and Reducers

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Eastman, Samuel, Co., Inc.
Elkhart Brass Mfg. Co., Inc.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Greenberg's, M., Sons
Halprin Supply Co.
McIntire, F. N., Brass Works, Inc.
Morysville Body Works, Inc.
Pacific Marine Supply Co.
Powhatan Brass & Iron Works
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Russell Uniform Co.
Wooster Brass Div., Fyr-Fyter Co., The

Siamese and Y-fittings

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Eastman, Samuel, Co., Inc.
Elkhart Brass Mfg. Co., Inc.

Fire Fighter Truck Co.
Fyr-Fyter Co., The
Greenberg's, M., Sons
Grinnell Co., Inc.
Halprin Supply Co.
McIntire, F. N., Brass Works, Inc.
Morysville Body Works, Inc.
Pacific Marine Supply Co.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Russell Uniform Co.
Snyder, M. L., & Son, Inc.
Wooster Brass Div., Fyr-Fyter Co., The

Siphons

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Eastman, Samuel, Co., Inc.
Fyr-Fyter Co., The
Greenberg's, M., Sons
Halprin Supply Co.
Morysville Body Works, Inc.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Russell Uniform Co.

Suction Strainers

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Eastman, Samuel, Co., Inc.
Elkhart Brass Mfg. Co., Inc.
Fire Fighter Truck Co.
Fol-Da-Tank Co.
Fyr-Fyter Co., The
Greenberg's, M., Sons
Halprin Supply Co.
McIntire, F. N., Brass Works, Inc.
Morysville Body Works, Inc.
Pacific Marine Supply Co.
Powhatan Brass & Iron Works
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Russell Uniform Co.
Wooster Brass Div., Fyr-Fyter Co., The

Swivel Joints

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Greenberg's, M., Sons
Halprin Supply Co.
McIntire, F. N., Brass Works, Inc.
Morysville Body Works, Inc.
Russell Uniform Co.
Wegner Machinery Corp.

HOSE BRIDGES

American LaFrance, Div. Sterling Precision Corp.
Bell Tower Products Co.
Consolidated Welding & Engineering, Inc.
Darley, W. S., & Co.
Fire Fighter Truck Co.
Halprin Supply Co.
Morysville Body Works, Inc.
Quaker Rubber Div., H. K. Porter, Inc.
Russell Uniform Co.

HOSE CABINET UNITS

American LaFrance, Div. Sterling Precision Corp.
American Rubber Mfg. Co., The
Circul-Air Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fyr-Fyter Co., The
Halprin Supply Co.
Morysville Body Works, Inc.
Pacific Marine Supply Co.
Snyder, M. L., & Son, Inc.

HOSE CARTS, RACKS

American LaFrance, Div. Sterling Precision Corp.
American Rubber Mfg. Co., The
Circul-Air Corp.
Darley, W. S., & Co.
Fyr-Fyter Co., The
H. & H. Truck Tank Co., Inc.
Halprin Supply Co.
Morysville Body Works, Inc.
Pacific Marine Supply Co.
Powhatan Brass & Iron Works
Russell Uniform Co.
Snyder, M. L., & Son, Inc.

HOSE CLAMPS

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Bar-Way Mfg. Co.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Morysville Body Works, Inc.
Pacific Marine Supply Co.
Powhatan Brass & Iron Works
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Russell Uniform Co.
Snyder, M. L., & Son, Inc.
Wooster Brass Div., Fyr-Fyter Co., The

HOSE CLEANER

Bi-Lateral Fire Hose Co.
Circul-Air Corp.
Halprin Supply Co.
Morysville Body Works, Inc.

HOSE COUPLING EXPANDERS

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Hewitt-Robins, Inc.
Howe Fire Apparatus Co.
Morysville Body Works, Inc.
Pacific Marine Supply Co.
Powhatan Brass & Iron Works
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Russell Uniform Co.
Snyder, M. L., & Son, Inc.
Wooster Brass Div., Fyr-Fyter Co., The

HOSE COUPLING EXPANSION RINGS

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
American Rubber Mfg. Co., The
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fabric Fire Hose Co.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Goodrich, B. F., Industrial Products Co.
Greenberg's, M., Sons
Halprin Supply Co.
Hewitt-Robins, Inc.
Morysville Body Works, Inc.
Pacific Marine Supply Co.
Powhatan Brass & Iron Works
Russell Uniform Co.
Snyder, M. L., & Son, Inc.
Wooster Brass Div., Fyr-Fyter Co., The

HOSE COUPLINGS, ADAPTERS, WRENCHES

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Allway Coupling Co.
American Rubber Mfg. Co., The
Bi-Lateral Fire Hose Co.
Bar-Way Mfg. Co. (Couplings, High Pressure)
Boston Woven Hose & Rubber Co., Div. American Biltrite Rubber Co., Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fabric Fire Hose Co.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Goodrich, B. F., Industrial Products Co.
Greenberg's, M., Sons
Halprin Supply Co.
Hewitt-Robins, Inc.
Howe Fire Apparatus Co.
McIntire, F. N., Brass Works, Inc.
Morysville Body Works, Inc.
Pacific Marine Supply Co.
Powhatan Brass & Iron Works
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Republic Rubber Div., Lee Rubber & Tire Corp.
Russell Uniform Co.
Snyder, M. L., & Son, Inc.
Universal Fire Apparatus Co.
Wooster Brass Div., Fyr-Fyter Co., The

HOSE DRYERS

American LaFrance, Div. Sterling Precision Corp.
Approved Fire Equipment Co., Inc.
Circul-Air Corp.
Darley, W. S., & Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
Morysville Body Works, Inc.
Russell Uniform Co.

HOSE FIBRE, POLYESTER

American Rubber Mfg. Co., The
Du Pont de Nemours, E. I. & Co., Inc.
Fire Fighter Truck Co.
Goodrich, B. F., Industrial Products Co.
Morysville Body Works, Inc.
Russell Uniform Co.

HOSE INCREASERS AND REDUCERS

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Elkhart Brass Mfg. Co., Inc.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Greenberg's, M., Sons
Halprin Supply Co.
McIntire, F. N., Brass Works, Inc.
Morysville Body Works, Inc.
Pacific Marine Supply Co.
Powhatan Brass & Iron Works
Russell Uniform Co.
Snyder, M. L., & Son, Inc.
Wooster Brass Div., Fyr-Fyter Co., The

HOSE JACKETS

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fire Fighter Truck Co.
Goodrich, B. F., Industrial Products Co.
Halprin Supply Co.
Morysville Body Works, Inc.
Pacific Marine Supply Co.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Quaker Rubber Div., H. K. Porter, Inc.
Republic Rubber Div., Lee Rubber & Tire Corp.
Russell Uniform Co.
Wooster Brass Div., Fyr-Fyter Co., The

HOSE REELS

American LaFrance, Div. Sterling Precision Corp.
Ardmore Products
Elkhart Brass Mfg. Co., Inc.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
H. & H. Truck Tank Co., Inc.
Halprin Supply Co.
Hannay, Clifford B., & Son, Inc.
Howe Fire Apparatus Co.
Morysville Body Works, Inc.
Pacific Marine Supply Co.
Powhatan Brass & Iron Works
Russell Uniform Co.
Snyder, M. L., & Son, Inc.
Ward La France Truck Corp.

HOSE STORAGE RACKS

American LaFrance, Div. Sterling Precision Corp.
Ardmore Products
Circul-Air Corp.
Elkhart Brass Mfg. Co., Inc.
Fyr-Fyter Co., The
Halprin Supply Co.
Morysville Body Works, Inc.
Russell Uniform Co.
W-B Manufacturing Co.

HOSE TURN TABLES

American LaFrance, Div. Sterling Precision Corp.
Circul-Air Corp.
Halprin Supply Co.
Morysville Body Works, Inc.
Russell Uniform Co.

HOSE WASHERS

American LaFrance, Div. Sterling Precision Corp.
Circul-Air Corp.
Fyr-Fyter Co., The
Halprin Supply Co.
Morysville Body Works, Inc.
Quaker Rubber Div., H. K. Porter, Inc.
Republic Rubber Div., Lee Rubber & Tire Corp.
Russell Uniform Co.
Snyder, M. L., & Son, Inc.
Wegner Machinery Corp.

HYDRANT WRENCHES

Akron Brass Mfg. Co., Inc
American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Greenberg's, M., Sons
Halprin Supply Co.
Morysville Body Works, Inc.
Pacific Marine Supply Co.
Powhatan Brass & Iron Works
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Russell Uniform Co.
S-T Hydrant Wrench Co. (Rachet)
Snyder, M. L., & Son, Inc.
Universal Fire Apparatus Corp.
Wooster Brass Div., Fyr-Fyter Co., The

HYDRANTS

Greenberg's, M., Sons
Keystone Valve Corp.
Morysville Body Works, Inc.
Mueller Co.
Ross Valve Mfg. Co., Inc.
Waterous Company
Wooster Brass Div., Fyr-Fyter Co., The

NOZZLES

Cellar Pipe

American LaFrance, Div. Sterling Precision Corp.
Akron Brass Mfg. Co., Inc.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fire Fighter Truck Co.
Greenberg's, M., Sons
Halprin Supply Co.
McIntire, F. N., Brass Works, Inc.
Pacific Marine Supply Co.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Morysville Body Works, Inc.
Rockwood Sprinkler Company
Russell Uniform Co.
Wooster Brass Div., Fyr-Fyter Co., The

Deck Guns

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Eastman, Samuel, Co., Inc.
Elkhart Brass Mfg. Co., Inc.
Fire Fighter Truck Co.
Greenberg's, M., Sons
Halprin Supply Co.
McIntire, F. N., Brass Works, Inc.

Deck Guns (Continued)

Morysville Body Works, Inc.
Rockwood Sprinkler Co.
Wegner Machinery Corp.
Wooster Brass Div., Fyr-Fyter Co., The

Deluge Sets

Akron Brass Mfg. Co., Inc.
Darley, W. S., & Co.
Eastman, Samuel, Co., Inc.
Elkhart Brass Mfg. Co., Inc.
Fire Fighter Truck Co.
Greenberg's, M., Sons
Halprin Supply Co.
Howe Fire Apparatus Co.
McIntire, F. N., Brass Works, Inc.
Morysville Body Works, Inc.
Rockwood Sprinkler Co.
Wegner Machinery Corp.
Wooster Brass Div., Fyr-Fyter Co., The

Distributor

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Greenberg's, M., Sons
Halprin Supply Co.
McIntire, F. N., Brass Works, Inc.
Morysville Body Works, Inc.
Russell Uniform Co.
Wooster Brass Div., Fyr-Fyter Co., The

Foam

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co
Elkhart Brass Mfg. Co., Inc.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
Morysville Body Works, Inc.
National Foam System, Inc.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Rockwood Sprinkler Company
Russell Uniform Co.
Snyder, M. L., & Son, Inc.
Wooster Brass Div., Fyr-Fyter Co., The

Fog

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Hardie Mfg. Co., Div. of Vulcan Iron Works
Howe Fire Apparatus Co.
McIntire, F. N., Brass Works, Inc.
Morysville Body Works, Inc.
Nichols, B. E., Mfg. Co.
Nielsen Nozzle Co.
Pacific Marine Supply Co.
Powhatan Brass & Iron Works
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Rockwood Sprinkler Co.
Russell Uniform Co.
Santa Rosa Fire Nozzle, Inc.
Wooster Brass Div., Fyr-Fyter Co., The

Fog Foam

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Morysville Body Works, Inc.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Rockwood Sprinkler Company
Russell Uniform Co.
Wooster Brass Div., Fyr-Fyter Co., The

Fog High Pressure

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Bean, John, Div., Food Machinery & Chemical Corp. (gun type)
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Hardie Mfg. Co., Div. of Vulcan Iron Works
Morysville Body Works, Inc.
Pacific Marine Supply Co.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Rockwood Sprinkler Co.
Russell Uniform Co.

Master Stream

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fire Fighter Truck Co.
Greenberg's, M., Sons
Halprin Supply Co.
McIntire, F. N., Brass Works, Inc.
Morysville Body Works, Inc.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Russell Uniform Co.
Wooster Brass Div., Fyr-Fyter Co., The

Partition

Akron Brass Mfg. Co., Inc
American LaFrance, Div. Sterling Precision Corp.
Elkhart Brass Mfg. Co., Inc.
Fire Fighter Truck Co.
Greenberg's, M., Sons
Halprin Supply Co.
Morysville Body Works, Inc.
Powhatan Brass & Iron Works
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Russell Uniform Co.
Wooster Brass Div., Fyr-Fyter Co., The

Pipes, Ladder

Akron Brass Mfg. Co., Inc. (also automatic)
American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Eastman, Samuel, Co., Inc.
Elkhart Brass Mfg. Co., Inc. (also automatic)
Fire Fighter Truck Co.
Halprin Supply Co.
McIntire, F. N., Brass Works, Inc.
Morysville Body Works, Inc.
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Russell Uniform Co.
Seagrave Corporation
Wooster Brass Div., Fyr-Fyter Co., The

Pipes, Play

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Eastman, Samuel, Co., Inc.
Elkhart Brass Mfg. Co., Inc.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Goodrich, B. F., Industrial Products Co.
Greenberg's, M., Sons
Halprin Supply Co.
McIntire, F. N., Brass Works, Inc.
Morysville Body Works, Inc.
Powhatan Brass & Iron Works
Republic Rubber Div., Lee Rubber & Tire Corp.
Russell Uniform Co.
Wooster Brass Div., Fyr-Fyter Co., The

Shut-Off

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Eastman, Samuel, Co., Inc.
Elkhart Brass Mfg. Co., Inc.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Greenberg's, M., Sons
Halprin Supply Co.
Howe Fire Apparatus Co.
McIntire, F. N., Brass Works, Inc.
Morysville Body Works, Inc.
Nielsen Nozzle Co.
Pacific Marine Supply Co.
Powhatan Brass & Iron Works
Pyrene-C-O-Two Div., Fyr-Fyter Co., The
Rockwood Sprinkler Company
Russell Uniform Co.
Snyder, M. L., & Son, Inc.
Wooster Brass Div., Fyr-Fyter Co., The

Turrets, Mechanically Operated

Akron Brass Mfg. Co., Inc.

VALVES

Discharge and Suction

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Eastman, Samuel, Co., Inc.
Elkhart Brass Mfg. Co., Inc.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Greenberg's, M., Sons
Grinnell Co., Inc.
Hale Fire Pump Co.
Halprin Supply Co.
Howe Fire Apparatus Co.
McIntire, F. N., Brass Works, Inc.
Morysville Body Works, Inc.
Pacific Marine Supply Co.
Powhatan Brass & Iron Works
Rockwood Sprinkler Company
Ross Valve Mfg. Co., Inc.
Russell Uniform Co.
Ward La France Truck Corp.
Waterous Company
Wooster Brass Div., Fyr-Fyter Co., The
Young Fire Equipment Corp.

Hydrant-Gates

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Eastman, Samuel, Co., Inc.
Elkhart Brass Mfg. Co., Inc.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Greenberg's, M., Sons
Grinnell Co., Inc.
Halprin Supply Co.
Keystone Valve Corp.
McIntire, F. N., Brass Works, Inc.
Morysville Body Works, Inc.
Mueller Co.
Powhatan Brass & Iron Works
Russell Uniform Co.
Waterous Company
Ward La France Truck Corp.
Wooster Brass Div., Fyr-Fyter Co., The

Post Indicator

Mueller Co.

Relief

Akron Brass Mfg. Co., Inc.
American LaFrance, Div. Sterling Precision Corp.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Greenberg's, M., Sons
Hale Fire Pump Co.
Morysville Body Works, Inc.
Mueller Co.
Pacific Marine Supply Co.
Ross Valve Mfg. Co., Inc.
Russell Uniform Co.
Universal Fire Apparatus Corp.
Ward La France Truck Corp.
Waterous Company
Wooster Brass Div., Fyr-Fyter Co., The

LIGHTING AND LIGHTING EQUIPMENT

BATTERIES, FLASHLIGHT

Fire Fighter Truck Co.
Halprin Supply Co.
Kelco Supply Co.
Pacific Marine Supply Co.
Ray-O-Vac Co.

BATTERY CHARGERS

Carpenter Manufacturing Co.
Fire Fighter Truck Co.
Halprin Supply Co.
Koehler Mfg. Co.
Onan, D. W., & Sons, Inc.
Pioneer Gen-E-Motor Corp.
Russell Uniform Co.

EMERGENCY GENERATORS

Portable

American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Detroit Diesel Engine Div., General Motors Corp.
Fairbanks, Morse & Co.
Fire Fighter Truck Co.
Halprin Supply Co.
Howe Fire Apparatus Co.
Katolight Corp.
Kohler Co.
Onan, D. W., & Sons, Inc.
Pacific Marine Supply Co.
Pacific Mercury Electronics, Inc.
Pioneer Gen-E-Motor Corp.
Russell Uniform Co.
Wincharger Corp.

Stationary

American LaFrance, Div. Sterling Precision Corp.
Detroit Diesel Engine Div., General Motors Corp.
Fairbanks, Morse & Co.
Fire Fighter Truck Co.
Katolight Corp.
Kohler Co.
Onan, D. W., & Sons, Inc.
Pacific Marine Supply Co.
Pacific Mercury Electronics, Inc.
Pioneer Gen-E-Motor Corp.
Russell Uniform Co.
Waukesha Motor Co.
Wincharger Corp.

LIGHTS

Emergency (Automatic)

American LaFrance, Div. Sterling Precision Corp.
Carpenter Manufacturing Co.
Falcon Alarm Co., Inc.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Gold Crest Safety Equipment Corp.
Halprin Supply Co.
Kelco Supply Co.
Portable Light Co., Inc., The
Russell Uniform Co.
U-C Lite Manufacturing Co.
Whelen Engineering Co., Inc.

Flares

American LaFrance, Div. Sterling Precision Corp.
Arguslite Co.

Central Fire Truck Corp.
Darley, W. S., & Co
Fire Fighter Truck Co.
Halprin Supply Co.
McDermott, Julian A., Corp.
U-C Lite Manufacturing Co.

Floodlights

American LaFrance, Div. Sterling Precision Corp.
Arguslite Co.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fire Fighter Truck Co.
Halprin Supply Co.
Howe Fire Apparatus Co.
McDermott, Julian A., Corp.
Natale Machine & Tool Co.
Pacific Marine Supply Co.
Portable Light Co., Inc., The
Russell Uniform Co.

Hand Lamps

American LaFrance, Div. Sterling Precision Corp.
Arguslite Co.
Carpenter Manufacturing Co.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fire Fighter Truck Co.
Halprin Supply Co.
Kelco Supply Co.
Koehler Manufacturing Co.
McDermott, Julian A., Corp.
Mine Safety Appliances Company
Natale Machine & Tool Co.
Portable Light Co., Inc., The
Ray-O-Vac Co.
Russell Uniform Co.
U-C Lite Manufacturing Co.

Searchlights

American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Fire Fighter Truck Co.
Darley, W. S., & Co.
Halprin Supply Co.
Koehler Mfg. Co.
McDermott, Julian A., Corp.
Mine Safety Appliances Company
Natale Machine & Tool Co.
Pacific Marine Supply Co.
Portable Light Co., Inc., The
Russell Uniform Co.
U-C-Lite Manufacturing Co.

PUMPS

PUMPS

Fire Apparatus

American Fire Pump Co.
American LaFrance, Div. Sterling Precision Corp.
Approved Fire Equipment Co., Inc.
Bean, John, Div., Food Machinery & Chemical Corp.
Brumbaugh Body Co., Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Hale Fire Pump Co.
Hardie Mfg. Co., Div. of Vulcan Iron Works
Halprin Supply Co.
Howe Fire Apparatus Co.
Oberdorfer Foundries, Inc.
Pacific Marine Supply Co.
Seagrave Corporation
Sharpsville Steel Fabricators, Inc.
Universal Fire Apparatus Corp.
Ward La France Truck Corp.
Waterous Company
Young Fire Equipment Corp.

Hand Pumps

Central Fire Truck Corp.
Darley, W. S., & Co.
Fire Fighter Truck Co.
Halprin Supply Co.
Oberdorfer Foundries, Inc.
Russell Uniform Co.
Smith, D. B., & Co., Inc.

High Pressure

American Fire Pump Co.
American LaFrance, Div. Sterling Precision Corp.
Approved Fire Equipment Co., Inc.
Bean, John, Div., Food Machinery & Chemical Corp.
Brumbaugh Body Co., Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fire Fighter Truck Co.
Gorman-Rupp Co.
Hale Fire Pump Co.
Halprin Supply Co.
Hardie Mfg. Co., Div. of Vulcan Iron Works
Howe Fire Apparatus Co.
Marine Products Company
Pacific Marine Supply Co.
Seagrave Corporation
Universal Fire Apparatus Corp.
Ward La France Truck Corp.
Waterous Company
Young Fire Equipment Corp.

Hydrant Dewatering

Akron Brass Mfg. Co., Inc.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fire Fighter Truck Co.
Gorman-Rupp Co.
Halprin Supply Co.
Marine Products Company
Oberdorfer Foundries, Inc.
Wooster Brass Div., Fyr-Fyter Co., The

Portable

American Fire Pump Co.
American LaFrance, Div. Sterling Precision Corp.
Approved Fire Equipment Co., Inc.
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fairbanks, Morse & Co.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Gorman-Rupp Co.
Hale Fire Pump Co.
Halprin Supply Co.
Hardie Mfg. Co., Div. of Vulcan Iron Works
Howe Fire Apparatus Co.
Marine Products Company
Oberdorfer Foundries, Inc.
Pacific Marine Supply Co.
Russell Uniform Co.
Sharpsville Steel Fabricators, Inc.
Universal Fire Apparatus Corp.
Young Fire Equipment Corp.

Suction Boosters

Central Fire Truck Corp.
Darley, W. S., & Co.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Gorman-Rupp Co.
Hale Fire Pump Co.
Halprin Supply Co.
Marine Products Co.
Potter-Horn, Inc.
Oberdorfer Foundries, Inc.
Universal Fire Apparatus Corp.

Trailer Mounted

American LaFrance, Div. Sterling Precision Corp.
Approved Fire Equipment Co., Inc.
Bean, John, Div., Food Machinery & Chemical Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Gorman-Rupp Co.
Hale Fire Pump Co.
Halprin Supply Co.
Hardie Mfg. Co., Div. of Vulcan Iron Works
Marine Products Co.
Maxim Motor Co.
National Foam System, Inc.
Oberdorfer Foundries, Inc.
Sharpsville Steel Fabricators, Inc.
Universal Fire Apparatus Corp.
Waterous Company

TOOLS

AXES

American LaFrance, Div. Sterling Precision Corp.
Atlas Safety Equipment Co., Inc. (Insulated)
Central Fire Truck Corp.
Darley, W. S., & Co.
Elkhart Brass Mfg. Co., Inc.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Howe Fire Apparatus Co.
Mann Edge Tool Company
Powhatan Brass & Iron Works
Russell Uniform Co.
Snyder, M. L., & Son, Inc.
Universal Fire Apparatus Corp.

CUTTERS, BAR, CHAIN, WIRE

American LaFrance, Div. Sterling Precision Corp.
Darley, W. S., & Co.
Central Fire Truck Corp.
Elkhart Brass Mfg. Co., Inc.
Fire Fighter Truck Co.
Halprin Supply Co.
Porter, H. K., Inc.
Russell Uniform Co.

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American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Darley, W. S., & Co.
Fire Fighter Truck Co.
Halprin Supply Co.
Russell Uniform Co.
Welders Service, Inc. (Packo Emergency)

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Halprin Supply Co.
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Milwaukee Electric Tool Corp.
Pirsch, Peter, & Sons, Co.
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Russell Uniform Co.
Universal Fire Apparatus Corp.
Wooster Brass Div., Fyr-Fyter Co., The

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Central Fire Truck Corp.
Darley, W. S., & Co.
Duo-Safety Ladder Corp.
Fire Fighter Truck Co.
Fyr-Fyter Co., The
Halprin Supply Co.
Pacific Marine Supply Co.
Pirsch, Peter, & Sons Co.
Russell Uniform Co.
Snyder, M. L., & Son, Inc.
Universal Fire Apparatus Corp.
Wooster Brass Div., Fyr-Fyter Co., The

HOT LINE HANDLING TOOLS

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Fire Fighter Truck Co.
Halprin Supply Co.
Russell Uniform Co.

JACKS (Hydraulic)

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Approved Fire Equipment Co., Inc.
Fire Fighter Truck Co.
Halprin Supply Co.
Holan Corp.
Mine Safety Appliances Company
Porter, H. K., Inc.
Russell Uniform Co.

POWER TOOLS

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Fire Fighter Truck Co.
Halprin Supply Co.
Milwaukee Electric Tool Corp.
Pacific Marine Supply Co.
Porter, H. K., Inc.

RESCUE TOOLS, HYDRAULIC

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Approved Fire Equipment Co., Inc.
Halprin Supply Co.
Howe Fire Apparatus Co.
Kelco Supply Co.
Milwaukee Electric Tool Co.
Mine Safety Appliances Company
Porter, H. K., Inc.
Russell Uniform Co.

SAWS, CHAIN

Fire Fighter Truck Co.
Halprin Supply Co.
Milwaukee Electric Tool Corp., (Electric)
Pacific Marine Supply Co.

TOOLS, GENERAL PURPOSE

American LaFrance, Div. Sterling Precision Corp.
Central Fire Truck Corp.
Fire Fighter Truck Co.
Howe Fire Apparatus Co.
Russell Uniform Co.
Universal Fire Apparatus Corp.

DIRECTORY OF MANUFACTURERS

Listed in WHERE TO BUY SECTION

For Advertisers in this issue see Advertising Index on page 826

A

A & W Specialty Co., Dept. FA, 3717 Midland Ave., Syracuse, N. Y.
Acme-Hamilton Mfg. Corp., Meade St., Trenton, N. J.
Acme Protection Equipment Co., 1215 Kalamazoo St., South Haven, Mich.
Akron Brass Mfg. Co., Inc., 1500 Spruce St., Wooster, Ohio
Allway Coupling Co., P. O. Box 2181, Grand Central Station, New York 17, N. Y.
Aluminum Ladder Co., West Darlington St. Ext., Florence, S. C.
American District Telegraph Co., 155 Sixth Ave., New York 13, N. Y.
American Fire Apparatus Co., Box 1024, Battle Creek, Mich.
American Fire Pump Co., P. O. Box 219, Main St. Rd., Battle Creek, Mich.
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American Rubber Mfg. Co., 1145 Park Ave., Oakland 8, Cal.
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Ansul Chemical Co., 1 Stanton St., Marinette, Wis.
Antrex Corp., 2001 W. Willow, Chicago 47, Ill.
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Ardmore Products, 1825 Shermer Rd., Northbrook, Ill.
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Audio Equipment Co., Inc., 75 Harbor Road, Port Washington, N. Y.

B

B & G Incorporated, 4328 N. Elston Ave., Chicago 41, Ill.
Bar-Way Mfg. Co., 2770 Summer St., Stamford, Conn.
Batrow Laboratories, Inc., Branford, Conn.
Beacon Falls Rubber Footwear, Beacon Falls, Conn.
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Bell Tower Products Co., 46 Barrett Ave., Worcester, Mass.
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Blackinton, V. H., & Co., Inc., 140 Commonwealth Ave., Attleboro Falls, Mass.
Blaze Guard Mfg. Co., North Bergen, N. J.
Boardman Co., Fire Apparatus Div., 1401 S. W. 11th St., P. O. Box 1152, Oklahoma City 1, Okla.
Body-Guard Mfg. Co., 222 S. Fourth St., St. Joseph, Mo.
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Boston Woven Hose & Rubber Co., Div. American Biltrite Rubber Co., Inc., P. O. Box 1071, Boston 3, Mass.
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F

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G

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I

Industrial Radio Corp., 428 N. Parkside Ave., Chicago 44, Ill.
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International Harvester Co., Motor Truck Div., 180 N. Michigan Ave., Chicago 1, Ill.
Investigations Institute, 53 W. Jackson Blvd., Chicago 4, Ill.

J

Janesville Apparel Co., 216 N. Franklin St., Janesville, Wis.

K

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Kidde, Walter, & Co., Inc., 133A Main St., Belleville 9, N. J.
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L

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M

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N

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Professional Fire Chemical Co., 17 W. 60th St., New York 23, N. Y.
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Q

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R

Radio Corp. of America, Communications Products, Front & Cooper Sts., Bldg. 15-1, Camden 2, N. J.
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S

Safa Alarm Div., Inc., Fyr-Fyter Co., The, P. O. Box 1118, U. S. Highway #1, Newark 1, N. J.
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U

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V

Valley Fire Truck Co., 59 Tuscola Rd., Bay City, Mich.

W

Ward La France Truck Corp., Elmira Heights, N. Y.
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Y

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BOOK DEPARTMENT

FIRE ENGINEERING

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Photo by Lt. Edward Carroll, Brookline, Mass., official photographer

Foss Heads New England Association of Fire Chiefs

Chief Guy L. Foss, Wolfeboro, N. H., was elected president of the New England Association of Fire Chiefs at its 37th annual conference held at Wentworth-by-the-Sea on June 22-25. A total of 832 members and guests attended the event. The resignation of John W. O'Hearn as secretary-treasurer was accepted with regret by the association. Chief O'Hearn has served the organization in that capacity since its organization in 1922. Due to ill health he was unable to be present at the meeting. In a fitting tribute the delegates elected him secretary-treasurer emeritus by acclamation in recognition of his long service to the organization.

Newly elected officers of the New England Association of Fire Chiefs (front row, left to right) are: Chief A. W. Kimball, Hingham, Mass., secretary-treasurer; Chief A. T. Wright, White River Junction, Vt., second vice president; Chief G. L. Foss, Wolfeboro, N. H., president; Chief F. J. Dagon, East Hartford, Conn., first vice president; Chief G. F. Salisbury, Central Falls, R. I., immediate past president.

(Center row, left to right): State directors: Chief T. J. Collins, New Haven, Conn.; Chief N. D. Broden, Cranston, R. I.; Chief A. H. Koltonski, Rutland, Vt.; Chief R. G. Seavey, Rochester, N. H.; Chief B. S. Curran, Scituate, Mass.; Chief R. J. Frates, Bath, Me.

(Rear row, left to right): Chief W. J. Dooling, Watertown, Mass., sergeant-at-arms; Rev. M. F. Collins, Boston, Mass., chaplain; Chief Henry Thomas, ret., Hartford, Conn., technical consultant; Chief T. H. Slaman, Wellesley, Mass., past president and acting secretary. Not present in photo are Rev. John P. Fitzsimmons, Belmont, Mass., chaplain, and A. P. Palmer, Woonsocket, R. I., press representative.

Chief W. R. Messer

Connecticut Teaches Crash Fire Fighting

The Connecticut Fire College, held during the week of June 8–13, inaugurated an aircraft crash fire fighting course that wound up with a public demonstration of an attack on a 500-gallon gasoline fire. The students, all experienced firemen, trained at the New Haven Fire Department drill grounds, site of the fire college, and at Bradley Field, Windsor Locks, Conn.

Highlight of the course was a public demonstration on Saturday, June 13, at Bradley Field. The crash truck, provided through the cooperation of William Connor, airport manager, was manned by graduates of the course. Backed up by a 2,000-gallon nurse truck, they made a run on a spill fire around an old wreck with turret pipes spewing fog-foam. Hand foam lines were then advanced as the simulated rescue of the pilot was carried out in accordance with the aircraft fire fighting practices learned during the week.

The course was conducted by Albert Mullen of the Rockwood Sprinkler Company, Chief John J. Daly of the Hamilton Standard plant fire department at Windsor Locks, and Master Sergeant Thomas Sivo of the Connecticut Air Guard at Bradley Field. All three are members of the Connecticut Fire Department Drillmasters Association, which provides instructors for the Connecticut Fire College.

Richard P. Sylvia

Student crash fire fighters advance on 500-gallon gasoline spill fire during final Connecticut training session at Bradley Field. Note use of aluminized proximity clothing

Signal Hill Joins L.A. County

The Signal Hill, Calif., City Council recently voted to merge its fire department with that of Los Angeles County. Effective July 1, it became a unified operation. The small, heavy oil-producing and industrial city thus became the first incorporated community to give up its own fire service and to contract with the County's Consolidated Fire Protection District for services in what may prove to be a precedent-making action. All members of the Signal Hill Fire Department, including Chief Lloyd Colson, were absorbed by Los Angeles County.

The agreement was reached after deep and thorough consideration by the city's leaders and was precipitated when Long Beach notified Signal Hill that Long Beach equipment would no longer respond on mutual aid. It was Long Beach and Los Angeles County equipment which helped the small Signal Hill department finally control last year's major Hancock Refinery blaze.

When County jurisdiction took over, it marked the end of a 34-year cycle. The Signal Hill Fire Protection District was formed in 1924 under County administration and was dissolved in 1925 when the city incorporated. Los Angeles County currently provides fire protection for 17 incorporated cities—but all of these were under county protection at the time of their incorporation.

Cliff Dektar

Maryland Reduces Fire Insurance Rates

The Insurance Commissioner of Maryland recently announced his approval of a 25 per cent reduction in fire insurance rates for homeowners, filed by the Maryland Fire Underwriters Rating Bureau. In addition, rates on household possessions have been reduced 5 per cent. Rates on mercantile buildings have been increased 5 per cent and on mercantile stocks 20 per cent. Many other occupancies received rate reductions of 15 to 30 per cent.

Let's talk frankly about mildew

Fire hose manufacturers have various "treatments" which they apply to their hose to render it mildew resistant.

So does Eureka . . . and we believe that ours is second to none!

BUT our more than 80 years' experience in the manufacture of the highest-quality municipal fire hose has convinced us that the *only sure way to prevent mildew* in fire hose is to *dry it thoroughly* every time it gets wet. Don't overlook even a light shower or stray spray at a fire which may dampen the unused hose in the truck bed.

It is just as important to keep hose *dry* as it is to keep it *clean*. "Treatment" doesn't take the place of good care in prolonging hose life. At best, it provides mildew *resistance*, not prevention! Such treatment may not *wash out*, but normal abrasion might *wear through* it. So play safe! KEEP YOUR HOSE DRY!

We sincerely hope that this frank word of caution will substitute for costly experience in many fire departments . . . particularly in financially-pressed volunteer companies! Naturally we'll be happy to hear from you if you have anything to add on this subject.

Note how criss-crossing vertical cords tie all plies into a single jacket.

Visit Booth No. 72A, IAFC Conference

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FALSE ALARMS

"What sort of a fellow is your new boy friend?"

"He's a perfect angel. And how is yours"?

"Oh, he's the very devil."

"Care to trade?"

Special Risk

A man with a wooden leg recently approached an insurance agent, asking for fire insurance on his leg. The agent, rather stumped, called his company underwriter for the proper manner in which to classify the policy risk. Shortly thereafter, the underwriter phoned back, stating that coverage could be provided easily by classifying the leg as a "wooden addition, protected by a sprinkler system!"

The husband and wife were arguing as husbands and wives will.

"I'm going home to mother," the wife said. "I should have listened to her 20 years ago."

Her husband replied: "Go ahead. She's still talking."

Sad Tale

The unhappy musician worked very hard on a new arrangement—then his wife decided not to leave town after all.

Two firemen were out for a night on the town. They made the rounds of the bars until they all closed in the early morning hours. Starting home, one said, "It's awful late. What will you say to your wife?"

"Oh, nothing much," answered the second fireman, "Just good morning, dear, or something of that sort. She'll say the rest!"

Two golfers were annoyed by a female twosome in front of them on the course. One of the ladies dawdled on the fairway, while her companion searched long and industriously in the rough.

At length one of the men, waiting at the tee, shouted: "Why don't you help your friend hunt her ball?"

"Oh, she has her ball," the lady blandly replied. "She's looking for her club."

"What would you boys like to inspect first?"

Two duck hunters spend hour after hour of shooting without ruffling the feathers of a single bird.

"It's getting late," one finally said, "Let's miss three more, then go home."

The Old Timer Says—

"A family man is one who has several small mouths to feed and one big one to listen to."

An irate parent wrote a note of complaint to a schoolmaster which ended as follows: "If all my Johnnie learns in school is to swear, I'll keep him home and teach him myself!"

In referring to another, one man described a certain person in these words: "He's the sort of guy you dislike at first, but after you get to know him a little better you detest him."—Bob Hamm

Young Earbanger: "Chief, in your 35 years of service, you must have seen many improvements in fire fighting."

Grizzled Veteran: "Yes, I have son, and I will tell you something else, I've been against every danged one of them!"

Chief T. A. Weaver

Pretty Waitress: "Do you two gentlemen see anything you like?"

Fireman: "Yes, but we've got to eat sometime."

Son: "Dad, what does the paper mean by saying Chief Jones went to the firemen's convention as a delegate-at-large?"

Dad: "He didn't take Mrs. Jones."

"So you deceived your husband!" said the judge gravely.

"On the contrary, your honor, he deceived me. He said he was going out of town and he didn't go."

The most disappointed people in the world are those who get what is coming to them.

Husband to wife: "I'll tell you whether I still love you or not after I find out what you are leading up to."

The Old Timer says: "Love is a game that is never called off on account of darkness."

When a man gets too old to set a bad example, he starts giving good advice.

Good Uniforms — a strong clue!

SOMETHING NEW?
I'LL SAY! FFB CHEVRON-4* ... A WONDERFUL NEW UNIFORM FABRIC!
SO WHAT MAKES IT SO WONDERFUL?
IT'S A SPECIAL 4-FIBER BLEND. WEARS LIKE IRON, COMFORTABLE, PLIABLE, LIGHT-WEIGHT, YET WARM... DRAPES BEAUTIFULLY...
SOUNDS EXPENSIVE.
DON'T THEY TEACH YOU NOT TO JUMP TO CONCLUSIONS? CHEVRON-4* COSTS LESS THAN YOU THINK. AND NOT ONLY IS IT LOW IN INITIAL COST, BUT IT ALSO IS MUCH MORE DURABLE. IT GIVES ALMOST TWICE THE WEAR!
SAY, I'VE NEVER HEARD YOU SO ENTHUSIASTIC...!
CHEVRON-4* IS REALLY SOMETHING!
YOU KNOW ALL THIS, OR ARE YOU GUESSING?
I KNOW... BECAUSE OFFICIAL, INDEPENDENT RESEARCH LABORATORY REPORTS TELL ME SO. THEY SAY FFB CHEVRON-4* FABRIC UNIFORMS WEAR LONGER, AND ARE EASILY MADE TO BE WARMER IN WINTER AND MORE COMFORTABLE IN SUMMER. IT HAS BETTER RESISTANCE AGAINST SHRINKAGE, FADING AND TEARING ... EVEN WHEN TESTED AGAINST PREMIUM-PRICED FABRIC.
SO IS THE DEPARTMENT GOING TO SPECIFY CHEVRON-4*?
I HOPE SO. DEPARTMENTS ALL OVER THE U.S. ARE REAL EXCITED ABOUT CHEVRON-4* FABRIC. IT MEANS REAL ECONOMY, REAL SERVICE, REAL SMART APPEARANCE, REAL VALUE.
I'D ADVISE ANY CITY TO LEARN MORE ABOUT THIS WONDERFUL UNIFORM FABRIC. JUST WRITE OR CALL TODAY FOR THE "OFFICIAL INVESTIGATION FILE"... A WEALTH OF INFORMATION ABOUT HOW TO GET THE MOST FOR YOUR UNIFORM DOLLAR!

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FFB CHEVRON-4 UNIFORM FABRIC

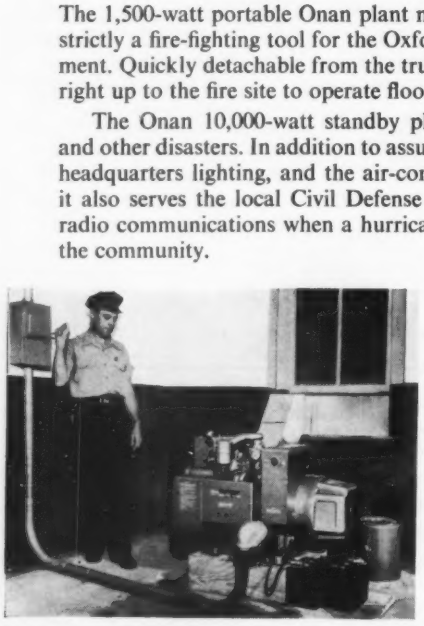
*CHEVRON-4 is a Mount Vernon Mills Fabric: Dacron† 47.5%, Orlon† 28.6%, Wool 19.0%, Other Fibers 4.9% †Du Pont Trademark

Onan NEWS REPORT

Department uses two Onan plants to fight fires, and hurricanes, too!

The 1,500-watt portable Onan plant mounted on the rig above is strictly a fire-fighting tool for the Oxford, North Carolina department. Quickly detachable from the truck mount, it can be carried right up to the fire site to operate floodlights and tools.

The Onan 10,000-watt standby plant below helps fight fires and other disasters. In addition to assuring power for police radio, headquarters lighting, and the air-compressor fire signal system, it also serves the local Civil Defense organization, guaranteeing radio communications when a hurricane or other disaster strikes the community.



10KW PLANT HANDLES ALL ESSENTIAL NEEDS

Radio, air compressor and lights are on the emergency circuit. A flip of the switch starts the plant. Onan also supplies automatic start-stop transfer controls for permanent installations where personnel are not always on duty.

Call the Onan distributor listed in your phone book or write for information

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Onan ELECTRIC PLANTS

Among the Buffs

By Paul C. Ditzel

Five clubs were voted into membership and the first associate member taken in as the International Fire Buff Associates held its Seventh Annual Convention in Nashville, June 25-27. IFBA Scribe Henry G. Nathan of 3916 Brookhill Road, Baltimore 15, Md., says the clubs taken into membership were:

The Anne Arundel Alarmers of Ferndale, Md.; The Box 234 Club of Pikesville, Md.; The Friendship Fire Association of Washington, D. C.; The Box 8 Association of St. Louis and the Racine, Wis., Fire Bell Club. Nathan says the honor of becoming the first associate member of the international group goes to Buff Byron W. Brown of Paducah, Ky.

More than 70 buffs and their families gathered in Nashville. Representing 30 clubs, the delegates elected Edward R. Damaschke of Detroit, editor of the *Visiting Fireman*, as the association's new president, succeeding Charles C. Price of the Baltimore 414 Association.

Other new officers include: Robert B. Wren of Cincinnati, secretary, and William E. Conradi of Newark, N. J., treasurer. Elected vice presidents were John Irvin, convention chairman, Nashville; Henry G. Nathan, Baltimore; Larry E. Pegler, Detroit; William H. Perkins, Boston; Edward J. Gill, Chester, Pa., and James M. Kirkley, Chicago.

The delegates reaffirmed that the 1960 convention will be held in Chester and that the next midwinter officers' meeting and 1961 convention will be scheduled for Chicago.

Convention activities began with an open house and meeting of the officers in the Noel Hotel.

One of the prime topics of business was approval of an accident insurance plan which was sent to individual clubs for their approval.

Delegates and some wives toured the safety building which includes the Central Fire Station and headquarters and the Nashville fire alarm station. The ladies toured the city under the guidance of Mrs. O. J. Vann, women's chairman.

The Nashville Fire Buffs Club opened its hospitality room at the hotel and "good fellowship and buffing prevailed," reports Nathan. Later, the visitors were taken to Old Hickory Dam and Locks and then to the beautiful Colemere Country Club where a southern barbecue was served. The club adjoins the Nashville airport and the buffs attended a turnout of the field's crash wagons when flames broke out in an airplane. Formal activities ended as visitors saw "The Grand Ole Opry" where a special section was set aside for them. Buff Nathan says Chief John D. Ragsdale and members of the city's fire department and the Nashville Chamber of Commerce aided with convention planning.

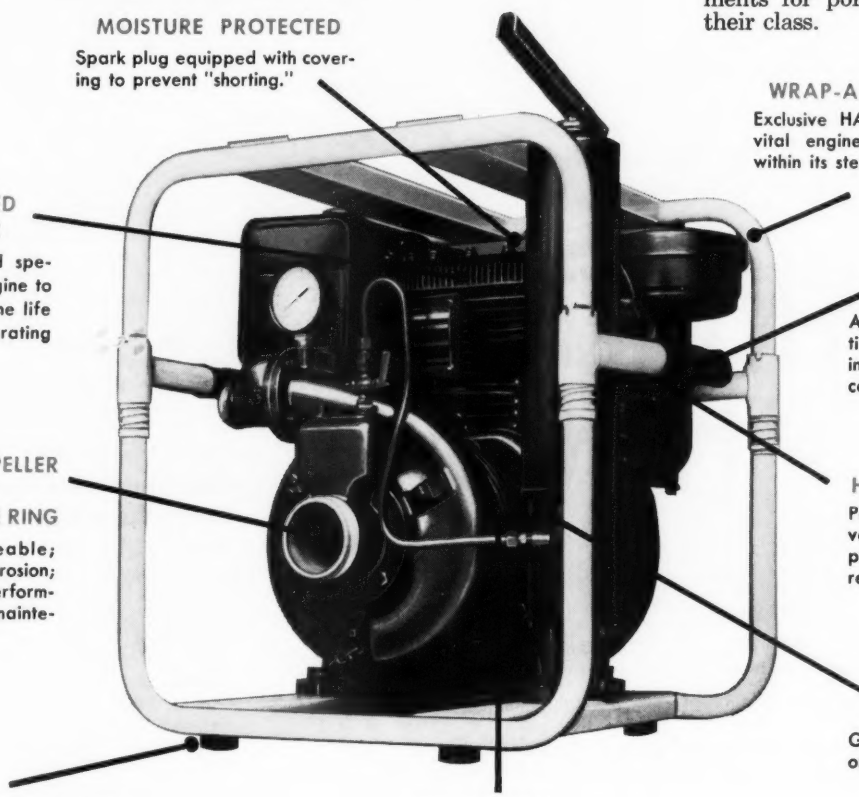
Baltimore's Box 414 Association welcomed the city's new fire chief, John J. Killen, when he took office and also Ba-

The original... and still the finest!

The HALE FZZ FZ Portable FIRE PUMPING UNITS

Here's the inside story on the famous Hale FZZ. Originated by Hale and often imitated but never duplicated, Fire Companies everywhere find the FZZ and its companion, the FZ, tops in the emergency work for which each is specifically designed.

See For Yourself . . . Check Feature by Feature and you'll understand why the Hale FZZ and FZ are the most useful pieces of emergency equipment you can own . . . why so many other fire-fighting companies depend on them in every fire-fighting emergency. Performance of both pumps substantially exceeds N.F.P.A. capacity and pressure requirements for portable pumps in their class.



MOISTURE PROTECTED
Spark plug equipped with covering to prevent "shorting."

WRAP-AROUND FRAME
Exclusive HALE design. Protects vital engine parts and pump within its steel enclosure.

MATCHED POWER
Pump designed specifically for engine to give long engine life and low operating costs.

FOLD-AWAY HANDLES
Adjust to four positions. Rubber grips insure safe, positive carrying.

BRONZE IMPELLER and CLEARANCE RING
Easily replaceable; resistant to corrosion; insure top performance at low maintenance cost.

HAND THROTTLE
Permits operator to vary the volume and pressure to fit his requirements.

EXHAUST EJECTOR
Gives fast priming on high lifts.

RUBBER PADS
Hold pump in position; prevent "walking."

STUFFING BOX
Noted for RELIABILITY and freedom from sudden failures at critical times, such as at scene of fires.

Write today for detailed information on FZZ and FZ to:

HALE FIRE PUMP COMPANY
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2 Great Units

The FZZ Packs a Pressure Punch! Best for pumping through a 2½" line over 350 ft. long.

The FZ Packs a Volume Punch! Best for pumping through a 2½" line not over 350 ft. long

SYNTHETIC FIBRES

. . . NEW in potentials for fashion and industry

. . . OLD in dependence, during production, on well-engineered systems for **control of fire in flammable liquids.**

Another modern industry served by

NATIONAL FOAM System, Inc.
West Chester, Pa.

timore's newest battalion chief, Kayton G. Moses. Chief Moses was a charter member of Baltimore's Box 13 Association, the forerunner of the Box 414 Association, says Editor Ray Wheatley of the 414 *General Alarm* newspaper.

"He became a member of 414 almost at its inception and is an honorary member of our organization and a constant visitor at our meetings and affairs," reports Brer Wheatley. Chief Moses told Editor Wheatley that one of the most memorable fires he fought was the 18-alarmer in Canton.

Fire Chief Killen told the Baltimore fan club not long ago that: "The Box 414 Association is doing a fine job on the fire grounds and for the department. They are beneficial to the health and above all, a moment of cheer to a tired, wet and cold fire fighter, with their ever-present hot coffee and a smoke." What better tribute could a buff want?

Herbert H. Harrington of 1557 West 27th Place, Cleveland 13, Ohio, wonders whether there are any fire buffs in Cleveland. If so, he'd like to hear from them. Firefan Harrington, formerly an active fireman, is now with the Erie Railroad. However he keeps up with Cleveland Fire Department activities by tuning in a Hallicrafters Model 104. He also is a fire policeman in Meadville, Pa.

"While I was in Meadville," he reports, "I had the pleasure of making a movie of fire department activities which was received by the city as being a well worthwhile contribution. I was also secretary of a volunteer fire company for 10 of my 18 years service with them."

That's about the size of things until the bells go down again next month. Please continue to send your buff anecdotes and club reports to me at Box 8731, Crenshaw Station, Los Angeles 8. □□

Cincinnati Sets Up Squad To Replace Salvage Corps

Fire Chief Dan F. Vogel of Cincinnati has set up a special squad in his department to do both fire fighting and salvage with the closing of Underwriters Salvage Corps operations there on June 30.

The 15 members of the new squad were selected from among 92 volunteers. Captain Albert Morel is in command of the unit. "This group will do whatever the battalion chief on the scene decides," Chief Vogel said. "If he thinks they can do more good by going in and fighting a fire than by spreading tarpaulins, he will assign them to hose lines. It's a trial run, but we think it will work."

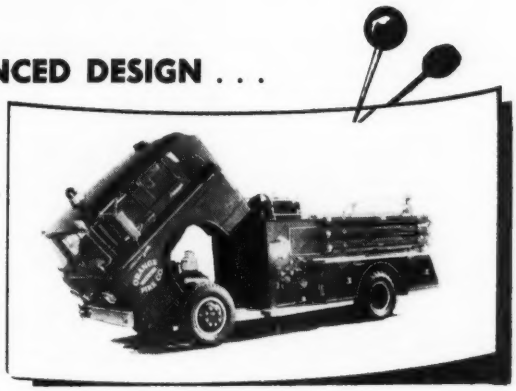
The Salvage Corps offered the city its three trucks and 400 tarpaulins as a gift. Two of the trucks will be stationed at Engine Co. 5, the third at Engine Co. 9.

MacDonald Reelected

The Eastern Association of Fire Chiefs re-elected Commissioner Edward J. MacDonald, White Plains, N. Y., as president at the recent conference held in Jamestown, N. Y., on May 21-23.

"new truck won 5 out of 7 awards...."

AN EXAMPLE OF CENTRAL ADVANCED DESIGN . . .



6-MAN, CAB-FORWARD CENTRAL PUMPER MOUNTED ON FORD C-800 CHASSIS. WATEROUS ELECTRO-MATIC PUMP. 500 GALLON RUST-PROOFED TANK. ELECTRIC REEL. ENGINE EASILY ACCESSIBLE WITH CENTRAL-ENGINEERED TIP-UP CAB. *A 10-man crew can ride this rig safely and easily.*

250, 500, 750, 1000, 1250 G.P.M. PUMPERS BUILT TO YOUR OWN EXACTING SPECIFICATIONS . . . Prompt Deliveries. Make and model chassis required may be secured from the dealer of your choice.

Before you buy ANY new equipment . . . it will pay you to get FACTS and FIGURES from . . .

CENTRAL FIRE TRUCK CORPORATION

MANCHESTER, MISSOURI

15 minutes West of St. Louis on Highway 100

A new brochure will be ready soon. Ask your Central representative for a copy.

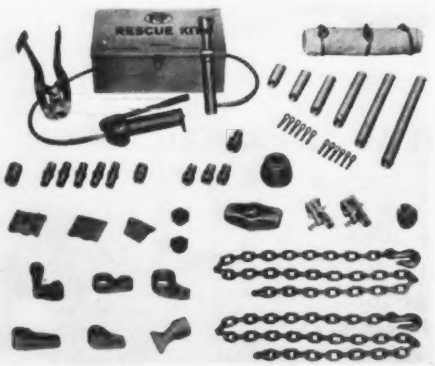
When *minutes* can *mean life or death*...

FREE THEM FASTER!

with the PF® RK-4 HYDRAULIC **RESCUE KIT**

41 versatile attachments in one all-purpose, completely portable kit, including:

- Powered by the fast-action PF 10-ton remote-control hydraulic jack.
- All-position self-retracting hydraulic ram to pinpoint pressure, even upside down.
- Exclusive chain pull kit — moves more metal faster than any other method.
- Bite-tite clamps tighten their grip as pull becomes greater.
- Compact spreader closes to 1½" and opens to 16" for use in tightest places.
- Speedlok tubing snaps together for pushing — pins lock it for pulling.
- Cleated push plate and ram base dig into wood, dirt, or asphalt for solid anchoring.
- Canvas case for carrying necessary pieces over ladders.
- Plus all necessary attachments to solve any rescue problem.



Only the PF RK-4 Hydraulic Rescue Kit provides such amazing speed, power and versatility in pushing, pulling, lifting, pressing, spreading, or bending to release victims trapped in vehicles, buildings, fires, explosions, plane crashes, train wrecks, or other disasters. No outside power needed. Remote control and extra long hose enable the rescuer to work at a safe distance or close to the victim. For full information on this all-purpose rescue kit, used by Fire Departments and Civil Defense Units everywhere, just mail us the coupon below!

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INSULATED CUTTERS

Cuts solid copper wire. Groping hook positions wire for cutting in darkness or smoke. Cohardite insulated handles tested to 20,000 volts.

HEAVY DUTY CUTTERS

Powerful, short-nosed jaws bite through hard chain, padlocks, and grilles quickly and easily, using handpower only.

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Please send me ☐ Rescue Kit Bulletin
☐ Information on Firemen's Tools

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City _____ State _____

What's Burning

THE FOLLOWING LIST includes fires of $10,000 and over in the United States and Canada for the period from June 22nd to July 20th.

Arkadelphia, Ark.—Building housing Hardin's Body Shop and Buck's Pool Hall destroyed.
Little Rock, Ark.—Magnolia Petroleum Co. district offices damaged.
Pine Bluff, Ark.—Sulphur Springs School building destroyed.
Texarkana, Ark.—Dillard's Department Store warehouse damaged.
Folsom, Calif.—Three warehouse and maintenance buildings at Folsom Prison destroyed.
Hollywood, Calif.—Laurel Canyon brush fire through Hollywood Hills destroyed at least 28 dwellings; others damaged.
Marysville, Calif.—Arnes Paint Store, Marysville Motor Supply Co., Spare Room Bar, Wolfe's Liquor and Sporting Goods Store and Marysville Bowl, bowling alley, damaged.
Oakland, Calif.—Stewart Mfg. Co. and nearby apartment dwellings damaged.
Pleasanton, Calif.—Western Sierra Lumber Co. damaged.
San Francisco, Calif.—Apartment dwelling at 1600 Waller, dwellings at 1622 and 24, W. C. Savage Co. carpenter shop, and buildings at 643 to 651 Cole, damaged.
Visalia, Calif.—College of the Sequoias lounge, bookstore and snack bar, damaged.
West Hollywood, Calif.—Supermarket adjacent to Academy Motion Picture Arts and Science Theater damaged.
Yuba City, Calif.—California Seed & Fertilizer Co. plant damaged.
Bridgeville, Del. — Market and Main Street building, housing restaurant, gas station and apartments, destroyed.
Bridgeville, Del.—Three barns on Henry Isaac Short, Sr. property destroyed.
Frederica, Del.—George C. Rothwell Inc. grain elevator destroyed.
Millsboro, Del.—Jackson Motor Co. building destroyed.
Yorklyn, Del.—National Vulcanized Fibre Co. plant damaged.
Washington, D. C.—Garrison Toy & Novelty Co. store damaged.
Cocoa, Fla.—Sullivan Packing Co. plant destroyed.
Palmetto, Fla.—Former boat building works, Melody Cafe, Little Jean's Beauty Parlor, Pete's Barber Shop and Tyson's Grocery destroyed; several other businesses damaged.
St. Petersburg, Fla.—Central Plaza Shopping Center damaged.
Riverdale, Ga.—Carson Industries and Tu Tone Corp. plants damaged.
Hillsboro, Ill.—Seltzer's Department Store destroyed.
Springfield, Ill.—Dunbar Trucking Co. warehouse, also housing liquid carbonic, badly damaged.
Brownstown, Ind.—Jackson County Court House damaged. Lightning.
Cedar Rapids, Iowa—Town House Motor Hotel, restaurant and office building destroyed.
Des Moines, Iowa—Reliable Rug & Furniture Cleaning Co. damaged.
Melrose, Iowa—Buildings housing United Telephone Co. of Iowa exchange, grocery store of Mike Haley and John Murphy's restaurant, destroyed.
Burlington, Ky.—Main plant of Tasty Foods Inc. damaged.
Lexington, Ky.—Woolcott Mills Inc. grain and feed mill destroyed. Possible arson.
Louisville, Ky.—Pacific Plywood Products Co. damaged.
New Orleans, La.—Sirloin Room Restaurant damaged. Arson suspected.
St. Bernard, La.—Peppo Oil Works Distributing Warehouse destroyed.
Baltimore, Md.—St. Vincent de Paul Society's store damaged. Fire started by a child.
Baltimore, Md.—Spevak-Stinson Co. meat packing plant damaged. Short circuit.
Elkton, Md.—Maryland Cork Co. warehouse destroyed. Lightning.
Acton, Mass.—Dewey & Almy rubber plant destroyed. Chemical kettle exploded.

Please turn page

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1879 — EIGHTY YEARS OF SERVICE — 1959

80 years of "know-how" is your assurance of getting the finest badges money can buy. That's why fire companies everywhere order and re-order high quality BRAXMAR BADGES.

All badges and insignia are available in Nickel, Chromium, Rhodium, Sterling Silver, Gold Plate, Perma-Glo, Gold Filled and 14 kt. Gold.

Fire equipment DEALER INQUIRIES invited. Please write for complete information.

The C. G. Braxmar Co., Inc. Dept. FE
216 East 45th Street, New York 17, N. Y.

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Please send me circular illustrating fire badges	☐
Please send me your Diamond Jubilee catalog	☐
Please send me new price list	☐
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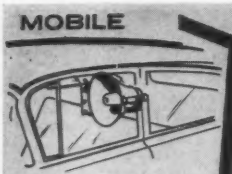

Instant window installation for police, fire and civil defense vehicles.

PORTABLE

Lightweight. Carries easily. Brings all-powerful voice to any site.

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A complete low cost PA system indoors or out.

NEW 3 in 1 "mighty mike"

transistor powered

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Certified for CD purposes.

Press to talk magnetic "mike"

WORKS ON FLASHLIGHT BATTERIES

LIGHTWEIGHT - 30 WATTS PEAK POWER

At last! A compact 3 in 1 all-purpose voice amplifier for use everywhere. Efficient and powerful enough to be heard 1 mile away . . . MIGHTY MIKE answers the need wherever orders are to be given, instructions sent and authority maintained through the use of the human voice.

A Complete Sound System at Low Cost

The versatility of MIGHTY MIKE amazes everyone. Its small size and low cost make it a must with all departments . . . yet it packs the punch of costly sound trucks and systems. Investigate today.

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4328 N. Elston Ave. Chicago 41, Ill.

Boston, Mass.—Tire Corp. of America and Murray Tire Co. destroyed.

Fall River, Mass.—Longfellow Public School destroyed. Suspicious origin.

Foxboro, Mass.—W. E. Aubuchon Co., Inc. hardware store, Moore's Dry Goods Store and apartments in Central Street building destroyed.

Haverhill, Mass.—Haverhill High School annex destroyed; St. Gregory the Illuminator Church damaged. Arson.

Haverhill, Mass.—Vile Building, housing several businesses, damaged.

Lunenburg, Mass.—Cattle barn of M. R. Levin & Sons Cattle Co. destroyed; another barn damaged.

Newburyport, Mass.—Unoccupied Webbs Wooding Mill and Baird & Eliot Furniture Warehouse destroyed; W. E. Atkinson Co. fuel and lumber firm, two dwellings and two wharves damaged.

Peabody, Mass.—A. C. Lawrence Leather Co. extensively damaged.

Pittsfield, Mass.—Berkshire Restaurant, Pittsfield Tire & Battery, Inc. and adjacent Tarbell-Watters store damaged.

Adrian, Mich.—R & B Bakery and adjacent Lowery Grocery damaged.

Cadillac, Mich.—First Congregational Church building damaged.

Dearborn, Mich.—Mars-Zenith Furniture Store damaged.

Grand Rapids, Mich.—Eberhard's Supermarket in Madison Square Shopping District damaged.

Jackson, Mich.—Lamar Pipe & Tile Co. bridge plant damaged.

Marlette, Mich.—Harper Grain Elevator destroyed.

Mt. Morris, Mich.—Genessee Street buildings damaged.

Petoskey, Mich.—Grain elevator owned by Frank Gruler destroyed.

Pontiac, Mich.—Rodney Lockwood Construction Co. of Detroit Shed and Equipment destroyed. Arson.

Shelby, Mont.—Commercial Hotel and adjacent stores damaged.

Nashua, N. H.—Nutt Building destroyed; Slawsby Building, housing the Archie Slawsby Insurance Agency Inc., damaged along with several stores across Main Street.

Elizabeth, N. J.—Apartment dwelling housing Elizabeth's Shoe Service, and attorneys' offices; adjacent City Hall Pharmacy and G & W Food Market, damaged.

Somers Point, N. J.—McKee City Farmers Exchange damaged.

West New York, N. J.—Benjamin's Decorator Store and adjoining Fox's Dry Goods Store, Daylight Bakery and B & D Clothing Store, damaged.

Woodbridge, N. J.—Furniture Company building on Route 9 damaged.

Harpursville, N. Y.—Barn on Russell Livermore farm destroyed. Spontaneous combustion.

Jamestown, N. Y.—Watson Mfg. Co. warehouse and adjacent building damaged.

Greensboro, N. C.—New Home Building Supply Co. and Charles D. Roberts Co. lumber yards destroyed.

Jacksonville, N. C.—Liberal Credit Store damaged.

Jacksonville, N. C.—Rose Brothers Furniture Store destroyed.

Tryon, N. C.—St. John's Roman Catholic Church virtually destroyed.

Walnut Grove, N. C.—Flour mill in business district damaged.

West Greenville, N. C.—Brown Furniture Co. damaged.

Williston, N. D.—Cafe, bowling alley and American Legion Club destroyed.

Dayton, Ohio—Seven downtown buildings, including a salvage shop, destroyed; four others damaged.

Klamath Falls, Ore.—Great Falls Northern Railroad trestle destroyed.

Klamath Falls, Ore.—Klamath Falls Lumber Co. retail store destroyed.

Ontario, Ore.—Ontario Onion Warehouse destroyed.

Pendleton, Ore.—Pendleton Rodeo Fairground damaged.

Springfield, Ore.—Kem Restaurant destroyed.

Toledo, Ore.—Toledo Dress Shop and Lockes Cafe destroyed.

Blain, Pa.—Adelphia Undergarment Co. plant destroyed.

Darby, Pa.—Darby Theater building damaged.

Darby, Pa.—Wellworth Department Store destroyed.

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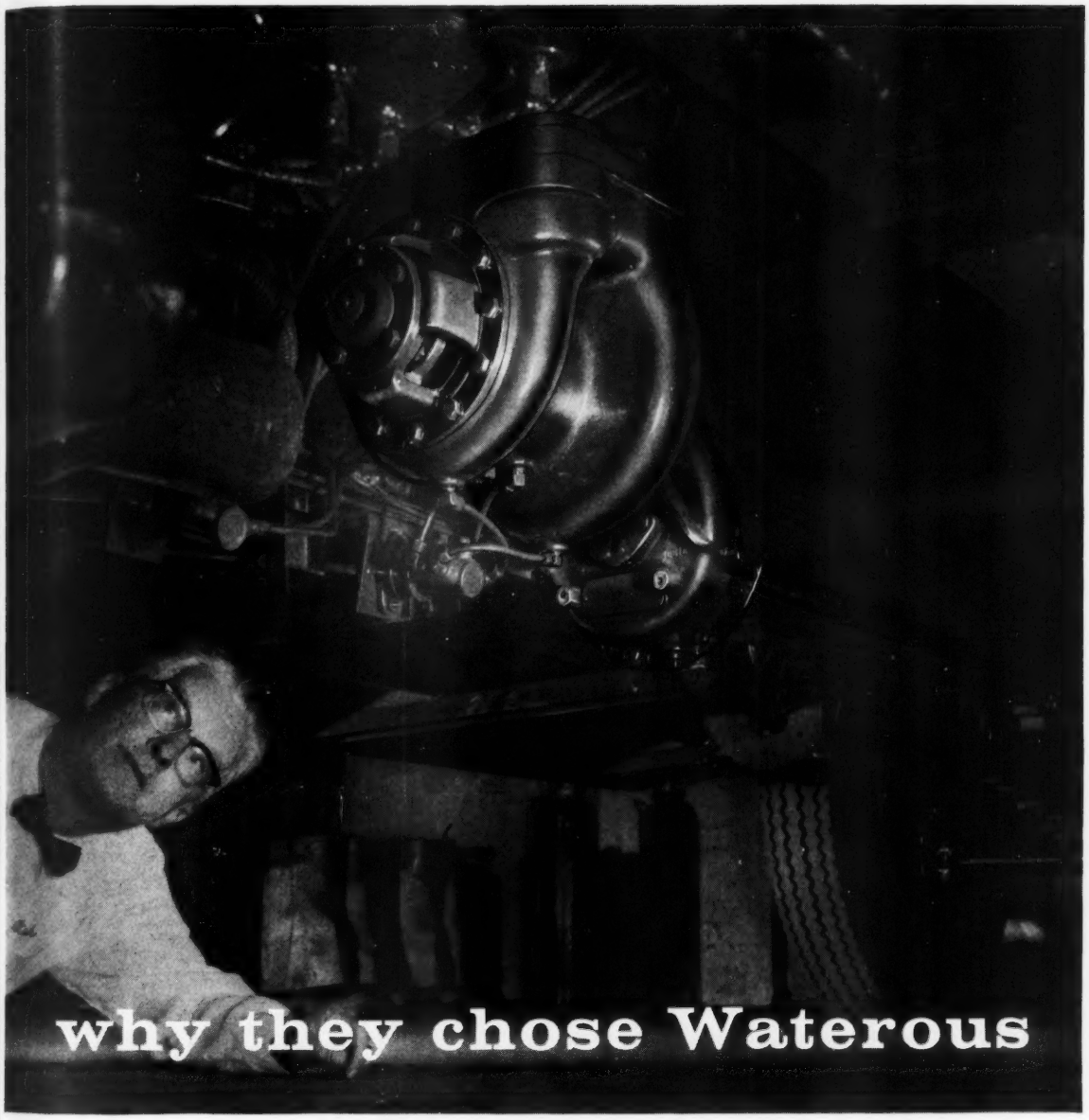

New CP-3 Pump gives maximum booster pump performance!

The Waterous Model CP-3 provides maximum performance—a wider range than ever before possible—for P.T.O. operation. This two-stage, centrifugal pump has exclusive series-parallel design . . . parallel for volume, series for pressure. It has a capacity up to 350 GPM, pressures to 700 PSI. Pressures up to 1000 PSI are available with Underwriters' pump. Ideal for "pump and roll" and for fog operation. Waterous quality construction throughout includes helical gears and oil-lubricated, outboard, antifriction bearings. For complete information on the CP-3 and other Waterous pumps, write:

WATEROUS COMPANY

80 E. Fillmore Ave., St. Paul, Minnesota, Dept. 310

Come and see Waterous in action at Booth 88 and Apparatus Space G, the 83rd Annual I.A.F.C. Conference, Pantlind Hotel, Grand Rapids, Michigan, Aug. 31 - Sept. 3.

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NEW N-CO-BELL®

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CREATED with IMAGINATION not IMITATION

• SUPERIOR • DIFFERENT • COMPELLING

PAT. PENDING

N-Co-Bell's controlled stroke provides superior gong vibration producing a distinctive and arresting sound. An unusually low amperage drain permits the use of 2 or 3 times as many bells per ringing circuit as other bells.

CONSIDER THESE FACTS - - -

- The 6 volts D.C. Bell draws only 0.14 ampere
- The 12-volts D.C. Bell draws only 0.07 ampere
- As many as 25 N-Co-Bells can be rung at less than 2 amps 12 volts D.C. at the power source.

CHARACTERISTICS

All N-Co-Bells are underdome with handy-mount features
Either pig-tail or plug-in wiring connections
Simple but effective "O" ring weather-proofing
Available in any normal A.C. or D.C. voltage

Sizes 6-8-10 and 12 inch
All size gongs interchangeable
Numerous models—all available for quick delivery
Contactless type A.C. bells for parallel or series operation are available in 12-24-48-120 and 220 volts A.C.
Underwriters' Laboratories listed for both fire protection and electrical use.

N-CO-BELLS mean ECONOMY

You pay no more for a QUALITY N-CO-BELL than an ordinary bell.

Compare our prices with other high quality bells.

No extra charge for distinctive sound performance.

Write for particulars * * * Order your sample

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NOTIFIER FIRE ALARM

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1½" LUM FOG NOZZLE

- **FOG** at all settings from wide angle to a straight stream fog
- **NON CLOGGING** handles water pumped from ditches, cisterns or streams
- **SIZES** 1½"–2½"
- **PRESSURES** one man operation to 300 P.S.I.
- **VALVE** ¼ turn from off to on
- **FLOW** greatest water flow at straight stream setting

LUM UNIQUE FIRE NOZZLES

We invite your inquiries

B. E. NICHOLS MFG. CO.

22201 Edison Ave., Dearborn 8, Mich.

Horsham, Pa.—Babylon Road mansion of Robert Ruff damaged.
Lewisburg, Pa.—Apartment dwelling owned by W. B. Byerly damaged.
Philadelphia, Pa.—1629 Ruan Street building, housing furniture and appliance outlet of Harry Bernstein, destroyed.
Philadelphia, Pa.—Barone Launch Service Inc. office building on Pier 5, South Wharves heavily damaged; two launches destroyed.
Philadelphia, Pa.—Milrose Shoe Store destroyed; Fay's Beauty Shop damaged.
Philadelphia, Pa.—Weistzel Lumber Co., Inc., Al-Kay Tire Sales, Central Electric Supply Co. and Weistzel retail outlet building destroyed. Explosion.
Schuylkill Haven, Pa.—Clifford Lookard, TV service warehouse and garage destroyed.
Wilkes-Barre, Pa.—Dwelling and two trucks on East End Boulevard damaged. Runaway trailer-truck.
Loris, S. C.—Piggly Wiggly Food Store destroyed.
Newberry, S. C.—Newton Tire & Recapping Co. heavily damaged.
Chattanooga, Tenn.—Put-N-Take building supply warehouse damaged.
Oak Ridge, Tenn.—Paragon Bowling Alley and dance hall damaged.
Caldwell, Tex.—Burleson County *Democrat*, weekly newspaper, and building housing Cozy Barber Shop destroyed; drug, dry goods store and several other buildings damaged.
Houston, Tex.—Lighthouse for the Blind damaged.
South Hero, Vt.—Stable, barn and granary on Bernard Goulette farm destroyed.
Bedford, Va.—Feed store, clothing shop and farmer's union store destroyed.
Leesburg, Va.—Clubhouse of Goose Creek Country Club damaged.
Richmond, Va.—Allen & Smith Co. Inc., candy manufacturing firm, damaged.
Richmond, Va.—McIntyre Implement building damaged.
Bremerton, Wash.—Maurer Dance Hall destroyed.
Fonasket, Wash.—Regal Fruit Co. and United Growers fruit warehouses destroyed.
Monroe, Wash.—State Reformatory dairy barns destroyed.
Tacoma, Wash.—Fick Foundry damaged.
Tacoma, Wash.—Wheller storage plant, a wheat storage shed and 11 railroad cars destroyed.
Wapato, Wash.—Wapato Bowling Lanes damaged. Varnish explosion.
Yakima, Wash.—Ahtanum Box Factory destroyed.
Shrewsbury, W. Va.—Seabolt Lumber & Building Supply Co. destroyed.
Vancouver, B. C.—Wasks' Department Store destroyed.
Cornwall, Ont.—Jade Gardens restaurant and apartments damaged.
St. John's, Nfld.—Freight shed on West End waterfront destroyed; Canadian National Railways dockyard damaged.
Pictou, N. S.—Waterfront housing Piers C and and E, Northumberland Strait ferry Prince Nova, five fishing boats, Magdelen Islands Transport Co., passenger terminal and Federal Mines Department building, destroyed. □□

May Fire Losses

Estimated fire losses in the United States during May amounted to $81,597,000, the National Board of Fire Underwriters has reported.

According to Lewis A. Vincent, NBFU's general manager, this $81,597,000 loss represents a decrease of 4.7 per cent from losses of $85,633,000 reported for May 1958, and a decrease of 10.0 per cent from losses of $90,689,000 for last April 1959.

Losses for the first five months of 1959 now total $482,999,000, a decrease of 1.7 per cent from the first five months of 1958, when they amounted to $491,187,000.

These estimated losses include an allowance for uninsured and unreported losses.

Fire-fighting vehicles which must keep on fighting call for. . .

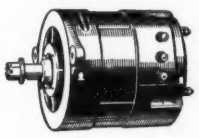
Delco-Remy Extra-Duty Electrical Equipment

to supply the extra electric power they need

In all kinds of weather and for hours on end, fire-fighting equipment must be able to stay on the job. *Dependable* and *ample* electric power is a must for the extra-heavy demands of floodlights, two-way radios and other special electrical units with which modern fire-fighting vehicles are equipped.

Delco-Remy extra-duty d.c. or a.c.-d.c. charging systems assure the extra electrical power needed in such service. Their special performance characteristics keep electrical accessories working at top efficiency. Delco-Remy extra-duty generators with matching regulators protect batteries against excessive discharge and cycling effects. Batteries stay charged, and last longer.

Be sure to specify Delco-Remy extra-duty electrical equipment, including the new longer life Delco batteries, on the new vehicles you order, and when you re-equip present ones. Both 6- and 12-volt a.c. and d.c. application packages are available.



Model 1117103 is a Delco-Remy 12-volt a.c. generator widely used on fire-fighting vehicles. This dependable unit can provide up to 105 amperes under pumping conditions, and can be equipped to supply up to 1200 watts at 110 volts, d.c.

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*2250 ¾" strokes per minute

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Persons in the News

Guthrie Chief at Atlanta

L. Waits Guthrie was named chief of the Atlanta, Ga., Fire Department on June 1, succeeding Chief C. C. Styron, Sr., who retired after 51 years service in the department.

Guthrie, a 21-year veteran of the department was named lieutenant in 1945 and two years later was promoted to captain. In February 1953, he was injured fighting a fire, but while abed convalescing attained first place in an examination for battalion chief. Prior to his most recent promotion, Chief Guthrie served as first assistant chief.

Bing Named Sandusky Chief

Paul Bing, who attained first place in a competitive examination, was named chief of the Sandusky, Ohio, Fire Department on May 11. He succeeds Wilson McLaughlin who resigned earlier this year to become state fire marshal.

Chief Bing was appointed to the department in 1937, and was promoted to lieutenant in 1949. He was appointed captain in 1955 and assistant chief in 1958.

Dickerson Heads Austin

R. H. Dickerson, a veteran of 25 years service, and for the past 12 years assistant chief of the Austin, Tex., Fire Department, was named fire chief on June 25. He succeeds Chief John Woody who was elevated to assistant director of public safety last October. Chief Woody headed the Austin department for more than 30 years.

Chief Dickerson joined the department in 1933 and was promoted to captain in 1936. He became district chief in 1940 and assistant chief in 1947.

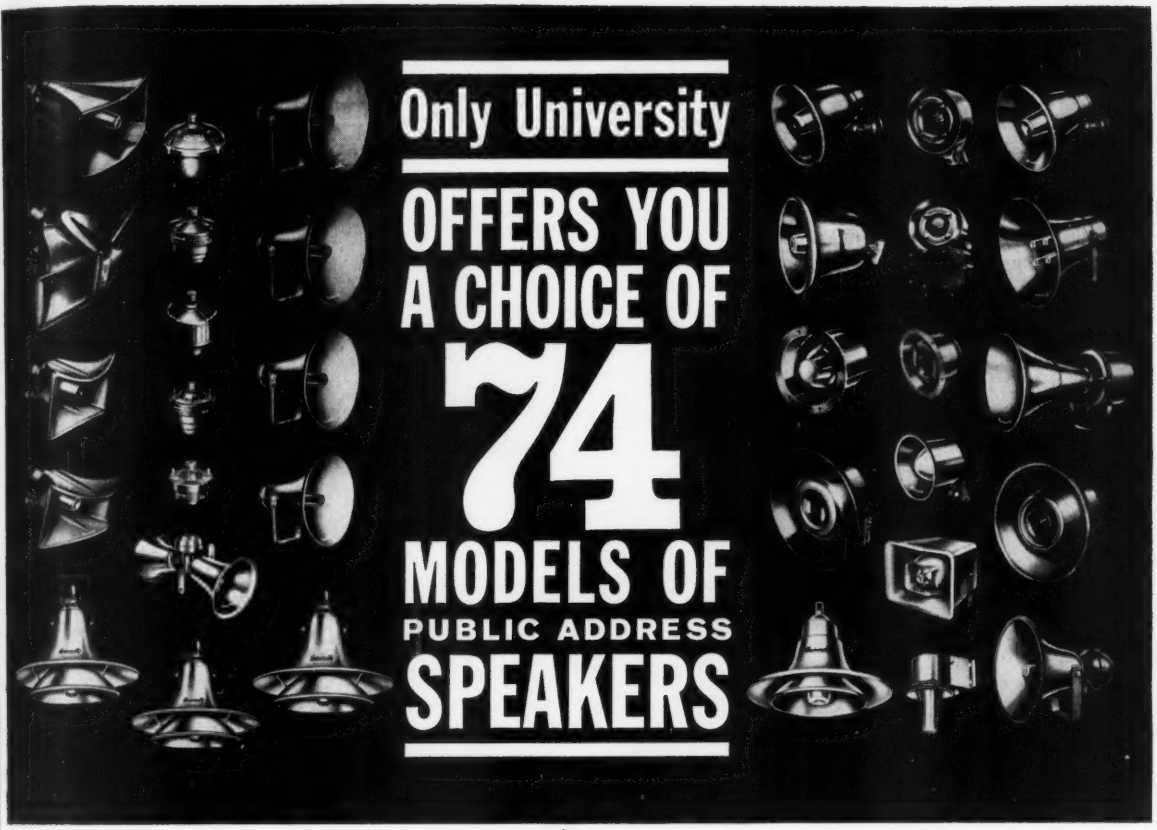
Bulger Succeeds Mercier in Rumford, Maine

George A. Bulger has been named chief of the Rumford, Maine, Fire Department to succeed Chief Solomon A. Mercier who retired on December 27, 1958, after 32 years service.

The new chief joined the department in 1948 and was promoted to lieutenant in 1955. In November 1958, he was appointed probationary chief pending Chief Mercier's retirement, at which time he was appointed to head the department. He is an instructor in the Maine fire training program.

San Diego Ups Officers

Two veteran San Diego fire fighters were named in March to fill newly created jobs as assistant city fire chiefs. They are Paul B. Allen, 55, in the department since 1924, and Orville H.



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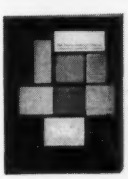

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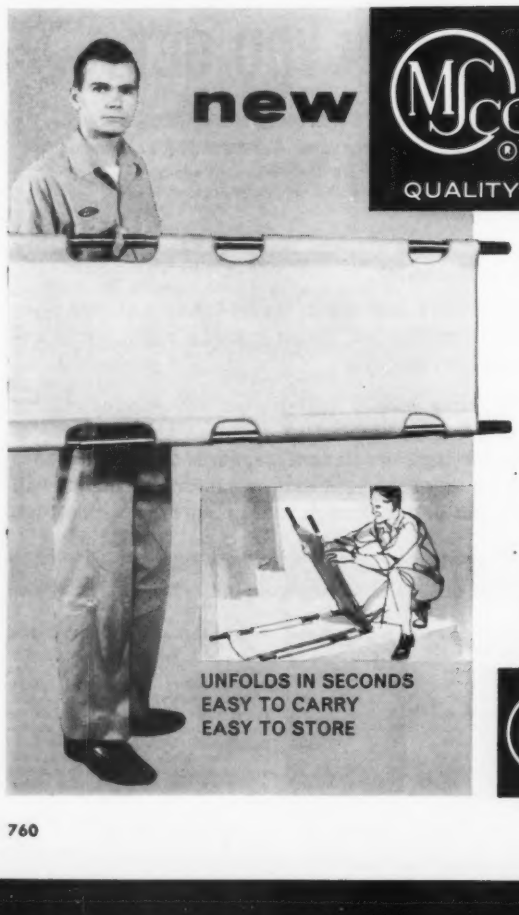

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Lusk, 54, who joined in 1928. Both Allen and Lusk have been battalion chiefs since April, 1947.

Fire Chief George Courser said the new assistants will be directly responsible for supervision of the fire fighting force, leaving administrative duties to himself and Deputy Fire Chief Al Penrose. Both Courser and Penrose, however, will continue to respond to multiple-alarms.

George Proper Named to New York Safety Division

George H. Proper, Jr., chief of the Midway Fire Department, Town of Colonie, N. Y., was named deputy director, New York State Division of Safety on July 16. He has been associated with the

New York Fire Insurance Rating Organization since 1950. During the past five years he has been with the Engineering Department engaged in municipal inspection work. A correspondent for FIRE ENGINEERING, Chief Proper is a certified New York State fire instructor and has lectured at several state instructor training conferences. He is also widely known in first aid and rescue circles.

Foster Named Minneola Chief

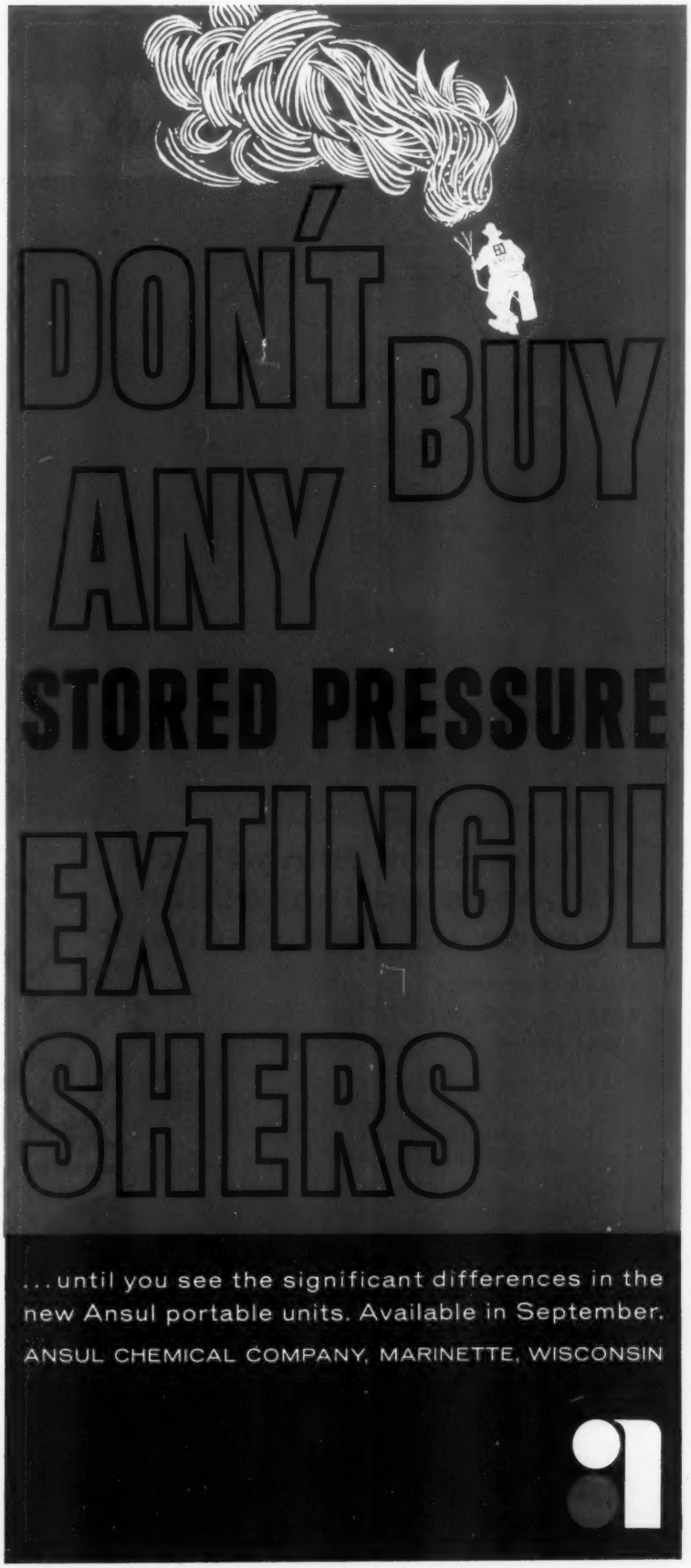
Jim Foster was recently named fire chief of Minneola, Kans., upon the retirement of O. R. Byerly who served as fire chief for 30 years. Chief Byerly was a member of the original fire department organized in Minneola in December 1922.

Snyder Chief of Beloit

Gordon Snyder became chief of the Beloit, Kans., Fire Department on July 1, succeeding Ed Schurtz who filled the post for the past 15 years.

Los Angeles Changes

Battalion Chief Thad Whippo, formerly head of the Los Angeles Fire Department's fire information and education unit, was recently promoted to assistant chief and placed in charge of Division 4, San Fernando Valley. He succeeds As-



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The lightweight Scott Sling-Pak can be donned in seconds. It gives you a minimum of 15 minutes of breathing protection at extreme exertion. The Scottoramic mask gives you unlimited vision in all directions to help you appraise the situation quickly and make your decisions. Chief, if you haven't tried a Scott Sling-Pak, your nearest Scott Distributor will be glad to show one to you. Use it once and you'll wonder how you ever got along without it.

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sistant Chief Herbert A. Krumsick, who retired July 3. Krumsick joined the department in 1914 and was senior man in service. Battalion Chief Elwood M. Culp has been named to succeed Whippo in the information unit.

In another change, Battalion Chief Henry Sawyer, Mountain Patrol commander, was promoted to assistant chief and remains in command of the patrol.

Cliff Dekter

Wayne C. Nelson Named New Galesburg Chief

Wayne C. Nelson was appointed chief of the Galesburg, Ill., Fire Department on June 30, to replace W. T. Ekwall who resigned in May. Born in Galesburg 42 years ago, Chief Nelson joined the department in 1942. He was promoted to captain in 1951 and to third assistant chief in May 1958.

Garcia Heads Union City

Kenneth Garcia, engineer of the Decoto Fire Department, has been appointed chief of the Union City, Calif., Fire Department. The new department is a result of the incorporation of the cities of Decoto and Alvarado into one community with the name Union City.

Wheeler Honored by Southeastern Chiefs

Miami Mayor Robert K. High (left) and City Manager Ira Willard (right) congratulate Miami Fire Chief Newton

City of Miami News Bureau Photo

L. Wheeler on presentation of his past president's plaque by the Southeastern Division of the International Association of Fire Chiefs. The plaque was awarded to Chief Wheeler for his outstanding leadership as president for the year 1958-1959.

Holmes Heads Monroe

Glenn C. Holmes advanced to chief of the Monroe, Mich., Fire Department on July 1, upon the retirement of Chief Russell Emerson, a veteran of 36 years service in the department. Chief Holmes joined the department on August 5, 1929. He was vice president of the Michigan Fire Fighters Association from its organization in 1933 to 1949.

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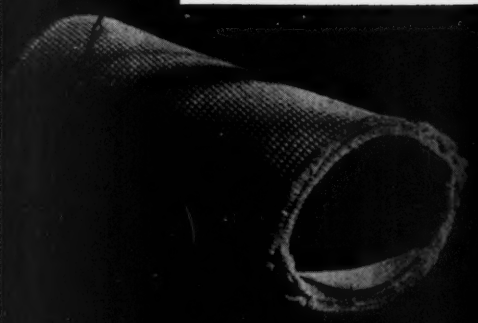

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These two new stainless steel Kidde portables feature simple, one-two operation—just aim at fire and push the button. Notice the way the hose is stored, safely out of the way. Notice the wide-open handle—to insure fast action even in gloved hands. Notice the dust-and-waterproof pressure gauges—which show at a glance whether the units are fully charged. All of the features—plus the slim design and light weight of these Kidde portables—make them the easiest-to-store, easiest-to-carry, easiest-to-operate portables on the market today.

Approved by Underwriters' Laboratories. Available in pressurized water for fires in ordinary combustibles, or anti-freeze loaded stream for fires in ordinary combustibles and flammable liquids. For more information, write to Kidde today.

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Admiral Named Honorary Los Angeles Chief

Rear Admiral J. W. Ailes, III, USN, was made an honorary fire chief of the Los Angeles, Calif., Fire Department on June 6. Los Angeles Fire Chief William Miller presented Admiral Ailes a fire chief's helmet in a ceremony in the Pentagon office of Fred A. Bantz, Under Secretary of the Navy.

The presentation was made on behalf of the International Association of Fire Chiefs and the hundreds of men in the fire services who served with the Navy and other branches of the armed forces, according to Chief Miller, who is himself a commander in the United States Naval Reserve.

Chief D. G. Aid Retires

Chief Daniel G. Aid, U. S. Naval Station Fire Department, Green Cove Springs, Fla., will retire on September 1 after 40 years in the fire service. Chief Aid was appointed to the Jacksonville, Fla., Fire Department in 1919 and was promoted to lieutenant in 1927. He was appointed a captain in 1933 and held that position until his retirement from the city department in 1946.

On March 6, 1946, he assumed command of the Naval Station fire department and has served continuously in that post until recently when he was placed on extended sick leave due to hypertension and a heart condition. A contributor to FIRE ENGINEERING, he is a member of the International Association of Fire Chiefs, the Florida State Fire Chiefs and during 1953-54 served as state vice president, Southeastern Association of Fire Chiefs.

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New Dobbs Ferry Chief Honored

Retired Lieutenant Hugh Kelleher of the New York Fire Department, left, presents plaque with official chief's badge to Clifton Foote, recently elected chief of the Dobbs Ferry, N. Y., Fire Department. Chief Foote became a member of Resolute Hook and Ladder Company in 1943. Subsequently he served as recording secretary, warden, lieutenant and captain. In April 1955, he was elected second assistant chief of the department and in April 1957, he was advanced to first assistant chief.

Photo by James Hallock.

Chief Foote is manager of office service and facilities with the General Electric Company in New York City. The presentation was made at a luncheon tendered to Chief Foote by a group of New York City firemen presently employed by General Electric.

Chief Broden Retires

Fire Chief Norman D. Broden, Cranston, R. I., retired August 3 after 32 years of service. He has headed the fire department for the past six years. He was appointed a fireman in 1927 and promoted to lieutenant in 1929. He was named captain in 1940 and deputy chief in 1946. Chief Broden is a director of the New England Association of Fire Chiefs and a member of the International Association of Fire Chiefs and the Rhode Island Fire Chiefs Club.

Norris T. Morton

Chief Bendel Retires

Chief Roland Bendel, Decoto, Calif., Fire Department, retired June 1 after 34 years of service. He joined the department with the rank of captain on July 1, 1925, when it was organized and became chief in 1927. Chief Bendel is a member of the International Association of Fire Chiefs and a life member of the Pacific Coast Inter-Mountain Association of Fire Chiefs. □□

Plastics Fire Research

A study to establish the basic factors affecting the use of plastics in buildings as related to fire safety has been undertaken at the Southwest Research Institute, San Antonio, by the Manufacturing Chemists Association, Inc.

The one-year project will seek to establish the position of plastics used in buildings from the viewpoint of fire safety related to building-code regulation.

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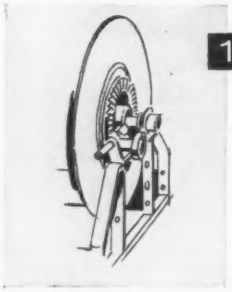

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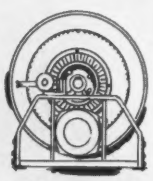

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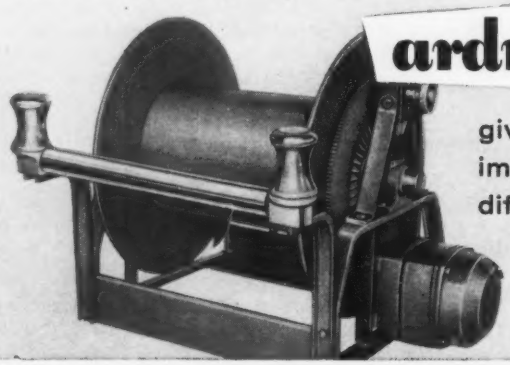

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Obituaries

R. A. Bogan, Sr.

Chief Robert A. Bogan, Sr., 68, Baton Rouge, La., Fire Department died June 29 at his home. He headed the department for the past 40 years. Chief Bogan joined the department as a volunteer in 1908 and became chief in 1918 when the first paid men were employed.

Widely known in the nation's fire circles, he was president of the International Association of Fire Chiefs in 1936-37 and in addition, served that organization for nine years as a director from the Southwestern Division. He also served the latter organization as its president. He was president of the Louisiana Firemen's Association for nine consecutive terms.

Chief Bogan was a member of former President Harry S. Truman's Fire Prevention Committee and during World War II was Louisiana State coordinator for fire fighting services. At the time of his death he was Baton Rouge assistant director for civil defense.

Assistant Chief F. F. O'Callaghan has been appointed acting chief in the interim.

Chief E. E. Wischer

Chief Edward E. Wischer, 61, Milwaukee, Wis., Fire Department, died July 26 of a heart attack. He was appointed to the department in 1921, promoted to lieutenant in 1929 and captain in 1933. He became a district chief in 1937 and in 1941 was placed in charge of the training bureau. In this capacity, he wrote several training manuals. He was named chief of department in 1945.

Widely known in the nation's fire circles, Chief Wischer was appointed a member of former President Harry S. Truman's National Fire Prevention Conference in 1947 and was appointed a National Defense Fire Consultant by the late Secretary of Defense James E. Forrestal. He was a past director of the Great Lakes Division, International Association of Fire Chiefs. He is survived by his widow and two daughters.

J. A. Downey

James A. Downey, 91, former chief of the Wallingford, Conn., Fire Department died June 29 at his home. He had served in the department for 54 years before retiring from active duty. One of his surviving sons is Morton Downey, the famous singer.

George V. Henrich

Ex-Chief George V. Henrich, Athol, Mass., Fire Department, died of an apparent heart attack early on the morning of June 22, while he was attending the annual meeting of the New England Fire

Headquarters for Fire Department

BRASS GOODS

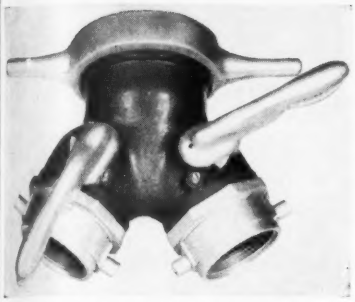

Fig. 164AN—4½" F x 2½ F x 2½ F quarter turn Ball Gated Siamese. Mail threads available.

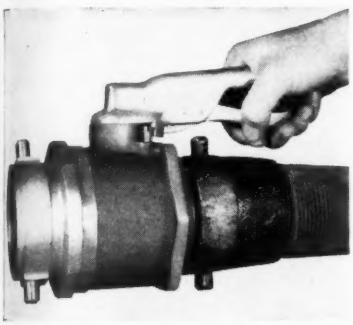

Fig. 163—Full waterway 2½" quarter turn Ball Gated valve any combination of threads available made Right or Left handed.

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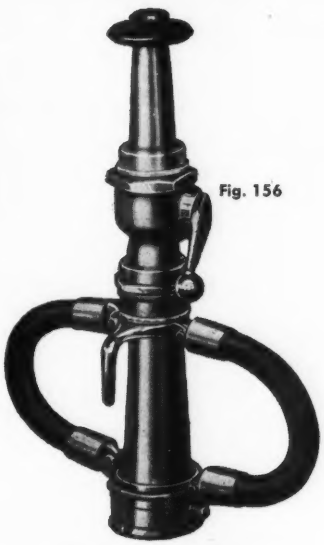


Fig. 156

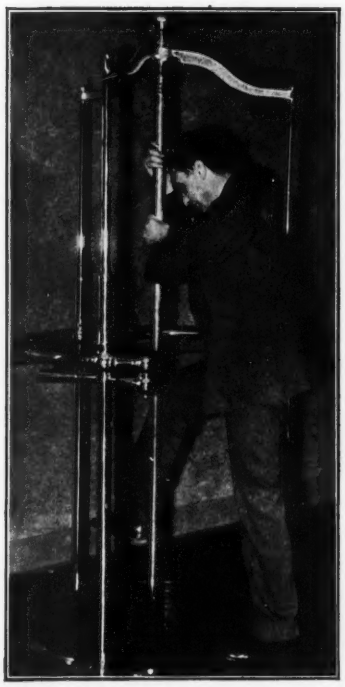
"MORSE" SHUT-OFF NOZZLE AND PLAYPIPE COMBINATION

FIREBOAT TOWER NOZZLE

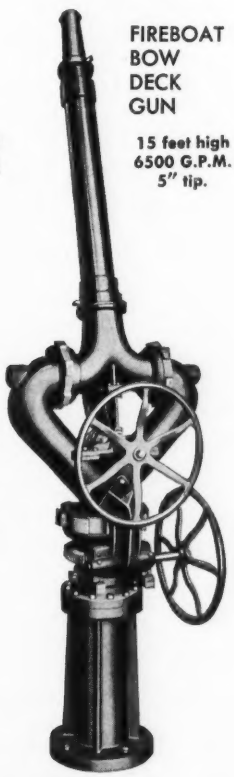
Operated by Remote Control

with full Tranverse Control

Figure 114-B — one of many — made by pioneers in nozzle manufacture.



AUTOMATIC-OPERATING SHUTTER AND SLIDING POLE



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15 feet high 6500 G.P.M. 5" tip.

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90 day unconditional exchange warranty covers materials and workmanship

BATTERY LIFE:
Up to 20,000 ten-second operations and up to six-months battery life under normal usage from standard 1½ volt ½ size flashlight batteries.

WEIGHT:
5 lbs. (with batteries)

Literature on request.

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Chiefs Association at Wentworth-by-the-Sea, Portsmouth, N. H. He was an active member of the International Association of Fire Chiefs, the New England Division and the New England Association of Fire Chiefs.

L. M. Roche

Lee Roche, 54, for 30 years a Chicago representative of FIRE ENGINEERING died unexpectedly on July 19 at his home in Park Ridge, Ill. For the past 10 years he had been Midwest advertising manager. In 1957 he suffered a heart attack but had made a satisfactory recovery. He is survived by his wife, a son, now in military service, and a daughter.

E. J. Svenson

Chief Eric J. Svenson, 47, West Windsor, N. Y., Fire Department, died of a heart attack on June 9. Chief Svenson headed the volunteer department since its formation in 1946. He was formerly assistant chief of the Valley Stream, L. I., N. Y., Fire Department.

J. O. Keegan

Chief Joseph O. Keegan, 64, Ayer, Mass., Fire Department, died June 22 at the Ayer Community Hospital after a long illness. A veteran of over 40 years with the department, he was named chief in 1956. He was a member of the New England Association of Fire Chiefs and the International Association of Fire Chiefs.

John W. O'Hearn

L. B. Seiler

Chief Louis P. Seiler, 69, head of the Cuyahoga Falls, Ohio, Fire Department since 1938, and a fireman for 46 years, died June 11 in St. Thomas Hospital, Akron.

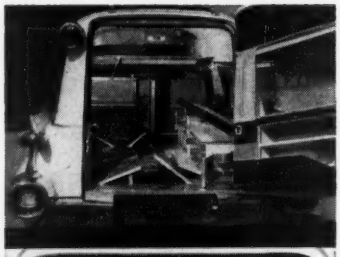
Norris T. Morton

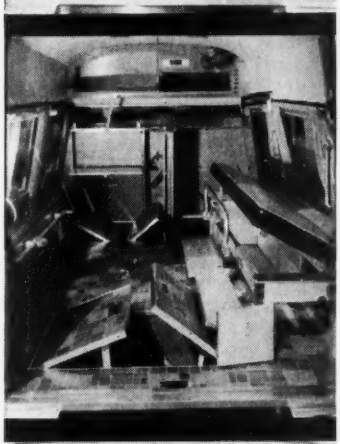
Ex-Chief C. N. Niday

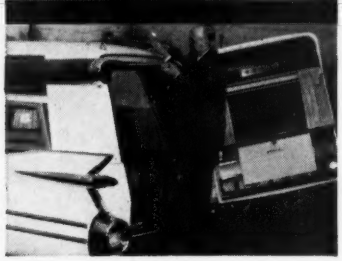
Former Chief C. Neal Niday, 56, San Bernardino, Calif., died July 7 of a heart attack. He was appointed to head the fire department in 1939 and resigned because of ill health in 1948. □□

Correction

A caption appearing with a photograph on page 294 of the article "Respiratory Protection of New York Firemen," April 1959 FIRE ENGINEERING, incorrectly credits Captain McMahon as demonstrating mouth-to-mouth breathing techniques. The person shown is Dr. Vincent J. Collins, who with Drs. James O. Elam and Virginia Apgar, as a physician's committee, New York State Society of Anesthesiologists, were instrumental in interesting the New York Fire Department to adopt this method of resuscitation.







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S&S PROFESSIONAL CADILLAC AMBULANCE

Roomier, ruggeder than any other unit . . . engineered for professional rescue men!

That's the all-new S&S Professional Ambulance for 1959, with loads of exclusives no other ambulance can match. Big, "working room" interiors . . . 5-patient capacity. More equipment compartments than any other ambulance. 54½" plus of inside headroom with full-opening (43" wide, 47" high) rear door. 5 Sola Ray lights. More oxygen equipment space. S & S high-strength box section steel construction.

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FIRST CHOICE of FIRE DEPARTMENTS

MARINE
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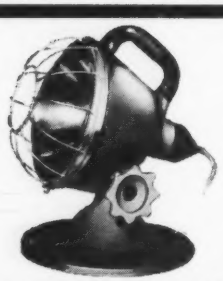
For the above marine service 163 type Circle-D's were used.

1500 Watt Portable

No. 156M 1500 Watt, R-80 Flood.
Rugged, Weatherproof sealed beam lamp, light weight only 11½ lbs. Compact 13½" high, 9" dia. base. Wired complete with twist lock connector.

No. 150 HIGH INTENSITY FLOOD R-40, 200-300 or 500 W.

Rugged, weatherproof, sealed beam lamp, light weight only 6 lbs. compact 11" high, 9" dia. base. Wired complete with twist connector.



No. 163 HIGH INTENSITY NARROW BEAM FLOOD OR SPOT LIGHT 300 WATT.

Same rugged construction as the 150 series, only lamp housing designed to use the Par 56 sealed Beam rim mounted lamp. 9" dia. base, weight 5½ lbs.

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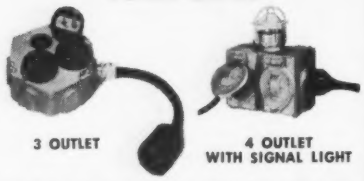

3 OUTLET

4 OUTLET WITH SIGNAL LIGHT

Boxes provide 3 or 4 20A outlets from single feed line. Twist lock connection, completely weatherproof.

QUICK RELEASE HOLD DOWN CLAMPS

For mounting portable lights on vehicles etc. Hold firm, yet permit quick release when needed. Solid bronze chrome plated.

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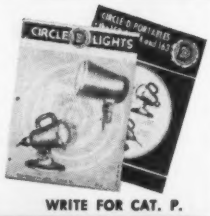
Are heavy duty, and have a rough service filament, heat and weather resistant glass. Mogul and Medium base. These lamps are designed to match the rugged construction of the CIRCLE-D LIGHTS. For trouble free performance specify CIRCLE-D LAMPS.

You have a lighting problem? — Contact Circle-D—We are constantly keeping pace with the ever growing demands for better lighting.



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FIRE AND RESCUE SERVICE

Continued from page 705

keep the refrigerator in a nearby clinic operating, and to preserve supplies of vital drugs. In another, more dramatic instance, the handy portable generators were used to power an iron lung for a paralysis victim. The unit also furnished around-the-clock communications and lighting service for over two weeks as a link between the fire alarm office and cable repairmen in a street cave-in in the downtown area.

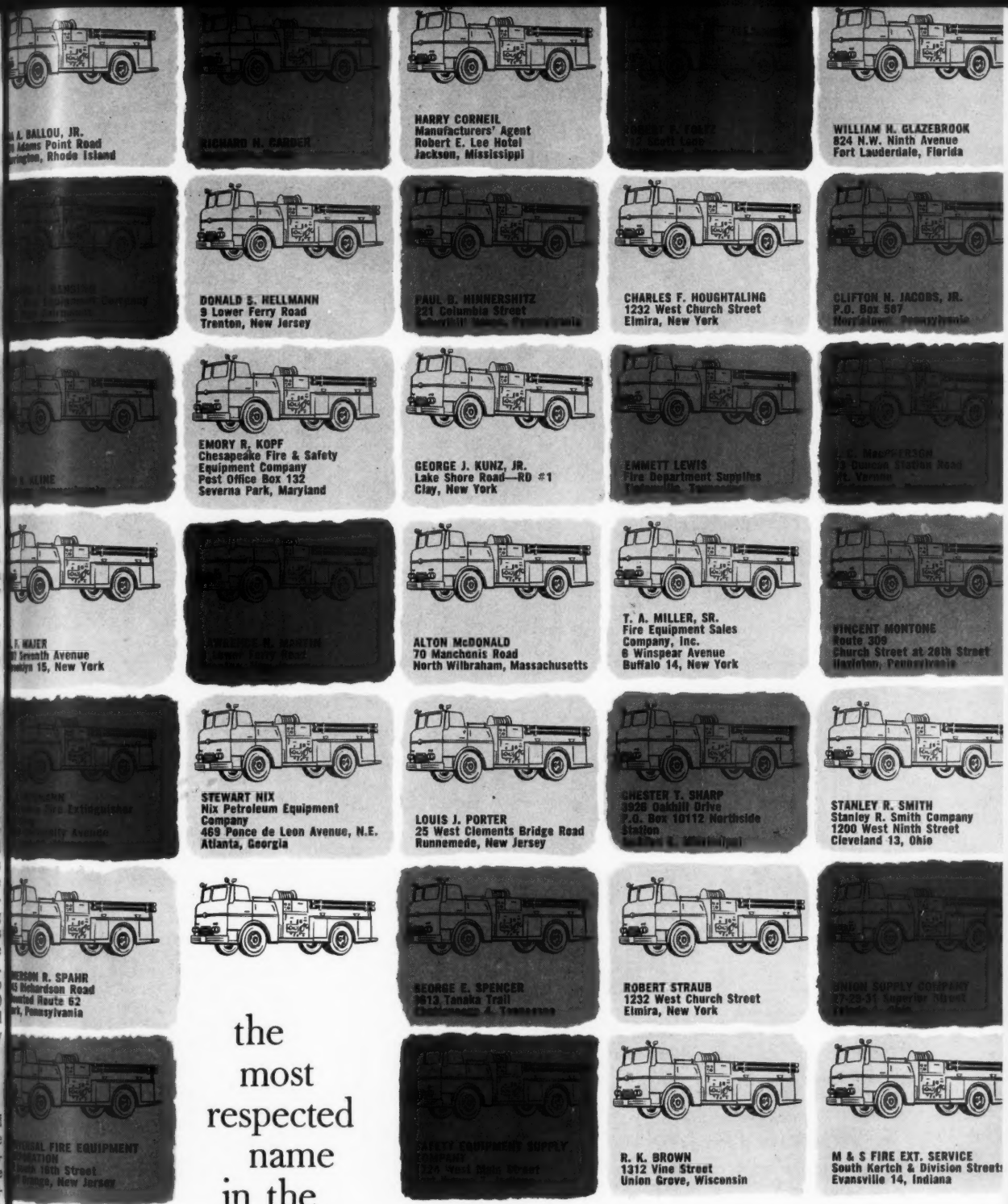
These tasks point up the variety of equipment carried and maintained by the Fire and Rescue Service. Each truck is fully equipped with 371 different tools including chain saws, first-aid equipment, two-way mobile and portable radios on the city fire frequency and power speakers which can be used as public address systems as well as to amplify the voice power of the two-way units. Besides the six heavy-duty trucks, the service also has a fully equipped station wagon used by Johnson.

The rescue service trucks are deployed about the city. A driver is assigned each truck for each eight-hour shift. Every time a 2-11, or better, is sounded, Johnson is notified by the fire alarm office. He calls the driver of the truck nearest the call and starts a chain of telephone calls so that a large number of men are notified within a few minutes. Each man is required to complete his part of the chain even if he is unable to respond to the call. Most members have radio receivers on the fire department frequency. "The men are free agents," says Johnson, "and so do not have to respond to calls." He says that if a call comes in at 3:00 a.m., one cannot really blame the men if they do not wish to respond. But he pointed out that those who miss too many calls are not kept on the service. He says, "We could find a thousand men who are looking for passes to cross fire lines. Getting men to regularly attend practice and calls is a different thing." In 1958 an average of 9.4 men turned out for each fire alarm. At one 3:30-a.m. and 12-below-zero blaze, 20 men turned out. Since the 80 members of the service are scattered throughout the city, this turnout is very good, says Johnson.

Volunteer Service

The service is entirely voluntary and the only compensations received by the men are the sincere respect and appreciation from the people of Chicago, the honor of working with the fire department and the inner satisfaction of knowing that they are rendering a great service to the city. In 1958 a total of 2,693 men responded to alarms, and the average time spent on each alarm was two hours and 48 minutes and three hours and 48 minutes on special-duty calls.

The special duty tasks are many and varied. Soon after its formation the service was called to canvass an entire neighborhood. All citizens had to be notified that a service station in the area had mistakenly sold gasoline for fuel oil. Its use in space heaters could have been danger-



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TOP NOTCH SIREN FIRECOAT
Heavy duty Firecoat made of tough jeans fabric, coated inside and out. Storm fly front with rapid action snap - and - dee fasteners. Patch pockets. Full corduroy collar with throat tab. Sleeves are plain or finished with pure gum cuffs or knitted wool wristlets.
TOP NOTCH SIREN BOOTS
Siren short bunker boot, side loops for easy on and off.
Siren Storm King — superior quality black boot with gray cleat design outsole, felt lining.
Write for a free folder illustrating the many features of Top Notch Siren products.
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ous. By ringing door bells and broadcasting over the p.a. speakers, the Civil Defense Service was able to collect more than 90 per cent of the gasoline sold.

The unit has served at all of Chicago's big fires since the squad's formation. At the Our Lady of Angels School fire, trucks were at the scene very shortly after the first companies. Immediately, all the first-aid training the civil defense men had received was put to good use as they aided the children victimized in the tragedy. The unit later drove to the Seneca, Ill., Civil Defense Medical Warehouse, a 140-mile round trip and brought back 36 large cartons of bandages.

Commissioner Quinn points out that even though Johnson, his officers and men, are performing a tremendous service to the City of Chicago, right now their great worth is the fact that training is transforming this unit into a hard-core, highly efficient group whose value would be incalculable during a disaster, such as immediate attack, tornado or fire.

In its first report to the city council transmitted by Quinn, Johnson says, "The purpose of the Chicago Civil Defense Fire and Rescue Service is to have a professionally trained group to cope with all emergencies and disasters in the event that our present fire services would become overtaxed in the performance of their duties." This they certainly have become. □□

CODED FIRE ALARM SYSTEMS

Continued from page 707

the Yonkers Fire Department, with support of mobile radio units, it's an up-to-the-minute fire alarm system that any communuity would be proud to possess.

Willimantic progressive too

Willimantic, Conn., is fortunate, too, in having a mayor, fire committee and finance board sympathetic to the needs of its fire fighters. The progress being made there reflects a citizenry thoroughly aware of the need for adequate fire protection. Says Mayor Florimand L. Bergeron, "We add fire alarm boxes and related equipment as fast as city growth demands and the budget permits."

Protected by a Type B System since 1887, this city of 18,000 now has 90 boxes, including those on the curb, in schools, hospitals, industrial plants, old-age homes, and supermarket. Any connections to the city alarm system must be of a type electrically and automatically transmitted directly to the homes of fire officers, as well as to the engine house. Volunteers are alerted by coded air horn signals.

Fast-timing of the boxes in relation to the air horn, permits station equipment to be well on its way before public curiosity can create confusion at the scene of the fire. Boxes are timed at ¾-second intervals, air horn at 2½-second intervals.

Quincy, Mass., shows the way

Another hopeful sign of progress occurred recently when Quincy, Mass., be-

came the first municipality to pass an ordinance requiring that all new residential and institutional construction install automatic fire detection and alarm facilities. The city has a Type A system. All residential and high-value areas are adequately covered by strategically located curb boxes. In addition, master boxes tie all hospitals, public schools, and a great many of the larger industrial buildings into the municipal system.

In a matter of seconds after any box is pulled, Quincy's entire fire defenses, as well as police and water works, know its location. Chief Thomas F. Gorman feels that his city of 83,835 now has the most advanced fire prevention and protective facilities.

Big job still ahead

There is still much to be done in the way of educating the everyday citizen, and the fire chief and his men can do much to keep the ball rolling. People must be made to know that, in addition to killing and maiming, fires destroy valuable industrial properties, resulting in a loss of community income from taxes. This loss must then be equalized by an increased tax rate in order to maintain the budget. Citizens must understand that a community's fire losses are reflected in higher costs for food, wearing apparel and housing—right down the line!

A tangible investment

Perhaps your department has encountered the false economy problem. "A coded alarm system will be just too much for the city budget!" Here again, you have cold hard facts to work with. You can prove conclusively that any community can afford such a system, individually tailored to its specific needs, and that it can't afford not to have the system. Completely owned, operated and maintained by the community which it protects, the total cost of a coded fire alarm system is far less than for other types of systems.

In addition, because it is recognized as an adequate protection system, it can help lower community insurance rates significantly. Installations of coded fire alarm systems have contributed to the reduction of insurance rates, and in many cases such savings alone have more than paid for the system well within 10 years.

Furthermore, over the year the increased operating efficiency of these systems has far outstripped the relative increase in cost of their components. For example, a typical fire alarm box which 33 years ago sold for $150, today (with many advanced design features) is priced at $175.

Dependability a strong story

Most persons just don't realize that the "sentinel on the corner" can operate for days on its emergency power supply; that it operates through snow storms, floods and hurricanes; that it's immune to service-crippling strikes; that it can be made completely automatic and free from

ROTA-BEAM!
360° ROTATING BEACON LIGHT

FOR SAFETY—SECURITY—QUALITY—ECONOMY AND SERVICE:
Your best buy is the ROTA-BEAM

We offer the product and improvements that *you* ask for:

We were *first* to furnish a portable (magnetic) beacon for Fire Chiefs and members of the department.

We were *first* to develop a beacon with the least amount of current draw and the greatest brilliance through the use of our magnifying lens rotating assembly.

We were *first* to develop a beacon that completely eliminates radio interference.

NOW, WE HAVE DONE IT AGAIN—We are *first* to develop a Quick Disconnect Mounting (electric contact and automatic locking). Write us for details.

This represents the same careful engineering design, highest quality parts and workmanship as on the original Rota-Beam, and carries the same guarantee.

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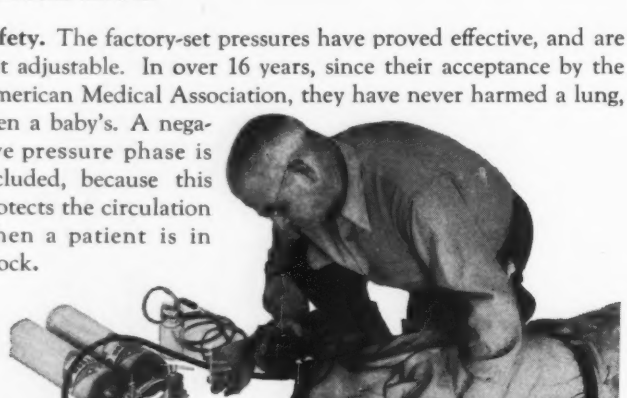
WHY

EMERSON Resuscitators

are trusted in emergencies

1. **Simplicity.** Speed saves lives and simplicity means speed. Emersons have it.

2. **Safety.** The factory-set pressures have proved effective, and are not adjustable. In over 16 years, since their acceptance by the American Medical Association, they have never harmed a lung, even a baby's. A negative pressure phase is included, because this protects the circulation when a patient is in shock.



3. **Efficiency.** Emersons run longer on a tank of oxygen (45 minutes on a "D" tank, if the mechanism is **air-mixing**). On a beach or other remote place this factor may save a life.

4. **Adaptability.** Standard models can be adapted for **dual, triple,** or **quadruple** use. Extension hoses can be used to give full protection 400 feet away from the parent machine, complete with **aspirator** as well as **resuscitator** and **inhalator** functions. Large cylinders can be hooked up, for long cases, by using a flexible connector.

5. **Quality.** Workmanship and materials are superlative, guaranteed by the factory (for two years) and checked by our representatives throughout the United States and Canada.

These advantages add up!

EMERSON RESUSCITATORS
can help you save lives!

See your Emerson representative or write:

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human error. These facts are a matter of record.

It remains for all of us concerned with fire protection to continue educating our citizens in matters of fire safety. We must keep them aroused and keenly conscious of all fire hazards such as unsafe practices, outmoded buildings and building codes and inadequate fire alarm systems. Only in this way can we hope to achieve the community-wide support that every fire department needs to do its job with maximum efficiency. □□

Coming Events

Aug. 30—Great Lakes Division, International Association of Fire Chiefs. Annual meeting, Pantlind Hotel, Grand Rapids, Mich. Secretary-Treasurer, Chief Willard G. Compton, 350 North Fountain Avenue, Springfield, Ohio.

Aug. 31-Sept. 3—International Association of Fire Chiefs. Annual meeting, Grand Rapids, Mich. Secretary-Manager, B. Richter Townsend, 232 Madison Avenue, New York 16.

Sept. 17 — Delaware Fire Chiefs Association. Semi-annual meeting, Christiana, Dela. Secretary, Howell H. Barnes, Smyrna, Dela.

Sept. 18-19—Delaware Volunteer Firemen's Association. Annual meeting, Newark, Dela. Secretary, E. Reynolds Bradley, Smyrna.

Sept. 21-23—New Mexico State Firemen's Association. Annual meeting, Carlsbad, N. M. For information write Chief Ira J. Stockwell, Fire Station No. 1, Carlsbad, N. M.

Sept. 22-25—Michigan Fire Inspector's Conference. Annual meeting, Michigan State University Kellogg Center, East Lansing, Mich. For information, write Arthur P. Patriarche, Secretary, Michigan Fire Inspector's Society, 716 Ann Street, East Lansing, Mich.

Oct. 4—Northeast Texas Fireman's Association. Annual meeting, Lone Star, Tex. Secretary, M. B. Minton, Lone Star Volunteer Fire Department, P. O. Box 579, Lone Star, Tex.

Oct. 19-22—International Municipal Signal Association. Annual meeting, Las Vegas, Nev. Secretary, Irvin Shulsinger, 130 West 42nd Street, New York 36, N. Y. □□

FIRE COLLEGES

Arizona State Fire School—Oct. 15-17, Phoenix, Ariz. For information, contact Battalion Chief Jake Siken, Firefighting Instruction Supervisor, Phoenix Fire Department, 49 South First Street, Phoenix.

Civil Defense Instructor Training Course for Eastern Area—Aug. 24-28, Sept. 14-18, Sept. 21-25, Sept. 28-Oct. 2, **Radiological Monitoring for Instructors;** Aug. 31-Sept. 4, Sept. 25-Oct. 2, **Principles of Organization and Staffing for Instructors;** Sept. 21-25, **Basic Civil Defense for Instructors.** All sessions will be held at the Eastern Instructor Training Center, Office of Civil Defense Mobilization, Brooklyn 35, N. Y. For information, write the Center at the above address.

Florida State Fire College—Sept. 7-11—**Units 101, 107, 201.** Sept. 14-18—**Units 102, 106, 202.** Sept. 21-25—**Units 103, 105, 204.** Sept. 28-Oct. 2—**Units 104, 206, 208.** For information, contact W. H. Barnett, Superintendent, P. O. Box 785, Ocala, Fla.

Indiana Fire Training Program—Sept. 9-12, **26th Annual State Fire School;** Oct. 27-29.

Fire Inspectors Course; Dec. 1-2, Fire Management Course. All courses will be held at Purdue University, Lafayette, Ind. For information, write Professor Shelby Gallien, Director, Public Safety Institute, Purdue University.

Kansas Fire School—Oct. 19-22, University of Kansas, Lawrence. Director, Clyde A. Babb, Director, University of Kansas Extension Classes, 111 Fraser Hall, University of Kansas.

Maryland Fire School—Sept. 1-4, **Twenty-Sixth Annual Short Course for Firemen.** All sessions will be held at the Fire Service Building, University of Maryland. For information, write Robert C. Byrus, Director, Fire Service Extension University of Maryland, College Park, Md.

Morris County, N. J., Fire School—Sept. 1, Par-Troy Hills District No. 6 Headquarters; Oct. 6, Budd Lake Fire Headquarters; Nov. 10, Millbrook Fire Headquarters, Randolph Township; Dec. 8, Morristown Fire Department. For information, write Robert H. Wright, Publicity Chairman, Long Hill Lane, Chatham, N. J.

New Hampshire Fire Training School—Sept. 19-20, Meadowwood Fire Department, Fitzwilliam, N. H. Further details will be available from Leo N. Sasseville, Central Station, Laconia Fire Department.

New Jersey State Fire College—Sept. 25-27, Oct. 2-4, National Guard Training Center, Sea Girt, N. J. For information, write Carl V. M. Cusumano, President, 24 Branford Place, Newark, N. J.

Ohio State Arson School—Sept. 14-18, New College of Law Building, Ohio State University. For information contact Wayne C. Jenkins, Chief of Fire Prevention, State Fire Marshal's Office, Wyandotte Building, Columbus, Ohio.

Ohio State Fire School—Sept. 14-18. Ohio State University, Columbus. For information contact Wayne C. Jenkins, Chief of Fire Prevention, State Fire Marshal's Office, Wyandotte Bldg., Columbus, Ohio.

Ontario Fire College—Aug. 31-Sept. 4, **Basic Fire Inspection Practices Course;** Sept. 14-18. **Fire Department Instructors' Course, Part I.** All the above courses are to be held at the Ontario Fire College at Gravenhurst, Sept. 14-18, **Thunder Bay Regional Fire School,** Fort William, Ont. Sept. 21-25, **Simcoe District Fire School;** Oct. 5-9, **Muskoka District Fire School;** Oct. 19-23, **Mutual Aid Forum.** The events listed above are to be held at the Ontario Fire College at Gravenhurst.

Pennsylvania Fire School—Aug. 24-28, Nov. 30-Dec. 4, **Fire Department Officership Course;** Oct. 5-9, **Basic Fire Fighting Course;** Aug. 31-Sept. 4, Oct. 19-23, **Fire Department Pump School;** Sept. 14-18, Oct. 26-30, **Advanced Fire Fighting Course;** Aug. 24-28, Sept. 28-Oct. 2, Nov. 16-20, **Ladder Rescue and Salvage Course.** All sessions to be held at the Pennsylvania State Firemen's Training School. For information, write Art Espey, Director, Box 631, Lewistown, Pa.

Southern Wisconsin and Northern Illinois Fire School—Sept. 13, **Truax Field Air Force Base, Madison, Wis. Secretary, Herman Pfund, New Glarus, Wis.**

Tri-State Fire School—Sept. 14-18, Huntington, W. Va. For information write Captain R. M. Myers, Secretary Planning Committee, c/o Fire Chief's Office, 816—9th Street, Huntington, W. Va.

Western Pennsylvania Firemen's Training Institute—Aug. 24-28. Annual Fire School, State Teachers College, California, Pa. For further information contact James Silbaugh, Secretary, Fire School Committee, Uniontown, Pa.

Wisconsin Regional Advanced Fire Protection Schools—Aug. 28-29. Beaver Dam; Sept. 8-9, Ashland; Sept. 10-11, Rhinelander; Sept. 24-25, Sheboygan; Oct. 1-3, Waupaca. For information, write William E. Clark, Supervisor of Fire Service Training, Wisconsin State Board of Vocational and Adult Education, 14 North Carroll St., Madison, Wis. □□

Super Graphic*

Basic Camera for Fire Departments

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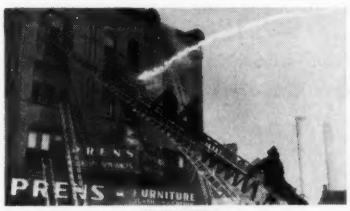

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The versatility of the Super Graphic enables it to be used for any type of picture required in fire work. Arson investigations, fire prevention training programs, laboratory work and many other phases of your work, can be handled completely with this brother of the famous Speed Graphic.

Because the Super Graphic does so many things, better and easier than other cameras, it can be considered as a basic camera for fire department use.

The great array of features built into the Super Graphic accounts for its all-around usefulness. Your Graflex dealer can fully explain and demonstrate these features for you. You'll find his name in the "yellow pages" of your local telephone directory. Or, write for descriptive literature to Dept. FE-89, Graflex, Inc., Rochester 3, N. Y. A Subsidiary of General Precision Equipment Corporation.

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103½" W.B.—115 H.P. Engine—Full Cab—500 G.P.M. Mid-Ship Pump Class "A"—200 Gal. Booster Tank & Reel—150'-1" hose—hose bed capacity 1000' of 2½"—Ladders, Axe and Pike Pole—Compartment 20" x 20" x 60"—Complete Fire Equipment as pictured—2 lengths of 4" suction hose—write for complete specifications and Prices.

THE CHAMPION WILLYS 4-WHEEL DRIVE FC-170 FIRE TRUCK

Here is a Fire Fighting Truck that will do everything that a large one will do, and can go places and fill the need that others CANNOT. Powered by the famous Super Hurricane, 6 cylinder, 115 H.P. engine.

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VALLEY FIRE TRUCK COMPANY

59 Tuscola Rd. Phone TW 5-5601 Bay City, Michigan

Also Available—L6226 below

DALLAS PUBLIC RELATIONS

Continued from page 709

ing. Response was so good that plans are being made to continue this on an annual basis throughout the summer months.

One of the best public relations programs or "gimmicks" is the firemen's string band—the Fire House Rhythm Kings. Formed about two years ago to provide a different type of program for civic groups, etc., this group of fire fighter-musicians has proved so popular with their repertoire of hillbilly, western, popular and rock 'n roll numbers that they play an average of five to 10 programs each week. Although primarily an entertainment program, the master of ceremonies injects fire prevention and fire safety into every program by using short, snappy commercials on this important subject as he announces the numbers. The "Kings" have appeared before audiences totaling over 250,000 persons during the past two years, plus a number of radio and television appearances.

Photo unit set up

An integral part of the fire prevention education and public relations office is the photo unit. One of the men is assigned to this unit full time and all others are able to fill in when necessary. Equipment includes a 16mm sound-on-film camera, a 16mm silent camera, two 4 x 5 press camera, two 35mm cameras, plus the numerous other devices and equipment required to operate an up-to-date photo unit and laboratory. All processing and printing, including color slides, are done in the lab, with the single exception of movie film. Two men are on call at all times to answer major fire calls and unusual emergencies involving fire equipment. In addition, one of our assistant instructors is also on 24-hour call with still another movie camera and press camera. This man is primarily interested in recording photos which will be of value to the department's training division. Plans are under way to film a number of fire prevention and training movies as time will permit.

Although not new in the fire service, one of the stations in particular has made quite a name for itself in Dallas County through its "Toys for Tots" campaign each Christmas. Firemen at this particular station work the year round on a collection of toys which they repair and paint, and then personally deliver on Christmas Eve to needy children in the Dallas area. It is estimated that at least 2,000 children have received gifts from this one fire station every Christmas for the past several years. Although many other stations participate in this or similar activities, Dallas' No. 27 Station stands out above them all in this community project.

Firemen are encouraged to participate actively in all phases of civic work and a number of fire fighters hold high offices in national and international service clubs. A walking blood bank made up of firemen regularly contributes blood to youngsters needing open heart surgery. Dallas fire fighters sponsor and work actively in the annual drive to raise funds

for combatting muscular dystrophy. In addition to their regular contributions to the Red Cross and Community Chest campaigns, Dallas firemen hold their own campaigns to benefit the Salvation Army each year at Christmastime.

For several years the Dallas Fire Department has cooperated with the Jaycees and other civic groups in the promotion of a "Miss Flame" contest to help publicize Fire Prevention Week. During recent years this contest has spread into the other incorporated cities and towns in the county and now the contest is climaxed on the Saturday ending Fire Prevention Week by the selection of "Miss Flame of Dallas County." This final elimination contest brings the beauties representing some 12 to 15 cities together on a mammoth outdoor stage at the State Fair of Texas where several thousand spectators view the proceedings. The winner, chosen by professional judges, receives her crown of office plus numerous merchandise gifts contributed by businessmen and merchants.

Good relations with neighbors

In keeping with its policy of improving relations with local citizens, the department has endeavored to lead the way in bettering the relations between firemen of the different communities in Texas. For the past several years it has furnished an average of 15 to 20 officers and men to serve as instructors at the Texas Firemen's Training School. In addition, it co-sponsors with the State Fair of Texas the annual pumper races for volunteer firemen in the North Texas area. This contest is expected to be thrown open to any department within the State by October, with prizes totaling $1,000 for the top three racing teams.

In addition to the specific items outlined above, every man in the Dallas Fire Department is given training in the elements of public relations, beginning with the newest recruits in the training school and continuing into every firehouse and special unit of the department. Since the department is now enjoying the finest relations with the citizens in its history, officials are convinced that it is all very worthwhile. Chief Penn receives several letters each week from citizens complimenting the conduct, activities and efficiency of the firemen, both as individuals and as groups. Dallas fire fighters are convinced that a good public relations program is as important to the fire service as is a good training program and heartily recommend it to firemen. □□

Miami Firemen on AAU Skindiving Team

Two Miami, Fla., firemen have been selected as members of a four-man AAU skindiving team that will represent the United States in the World Spearfishing Championship tournament on August 20 at Malta in competition with 17 European countries. Firemen Don Delmonico and Paul Damman were chosen after extensive tests involving diving skill with and without artificial breathing apparatus.

Potter

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SLIDE FIRE ESCAPES

POTTER Slide Fire Escapes are designed for Schools, Hospitals, Orphanages, Homes for Aged, Mental Institutions, Industrial Plants and Buildings of Public Assembly.

Types

Potter Slide Fire Escapes are constructed in two types—The Straight Tubular Chute and the Vertical Spiral — and in two sizes — one for able-bodied persons of all ages; one for removal of bed-ridden patients on mattresses.

Advantages

POTTER Escapes are entered direct from the room or hall, eliminating the need for walking out on to platforms and thus assuring the fastest possible exit. They can be entered at many floors at the same time without confusion, congestion or injury.

There is no acceleration in spiral escapes; therefore, they can be used on thirty-story buildings as safely as on buildings of two or three stories. Because of the change in position, one does not get dizzy.

POTTER Escapes eliminate slipping, falling, stumbling and pushing which among the panic-stricken often result in injury and death.

Because the escapes are fully enclosed, the occupants of POTTER equipped buildings are fully protected from falling objects, smoke, flames and adverse weather conditions which usually interfere with the use of open fire escapes.

Hundreds of lives have been saved in 30 instances of record where POTTER Escapes were used to evacuate burning buildings without injury or loss of life.

Approval

POTTER Slide Fire Escapes have been tested, approved and listed as standard by the Underwriters' Laboratories for over 25 years. They carry the approval of the Building Exits Code of the National Fire Protection Association.

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Call **ONE** *not* **ALL**
automatically...
SELECT *the proper*
GROUP *for* **ALERTING!**
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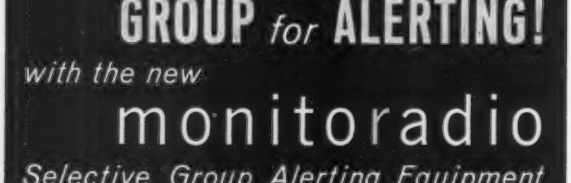
Selective Group Alerting Equipment



TC-1 TC-2

Long needed dependability at a realistic cost . . . Monitoradio Division of I.D.E.A., Inc., has developed a device for selective group alerting. This is particularly desirable where one transmitter is being used for more than one purpose; as for instance, one transmitter may be used for the Police Department, the Fire Department, and miscellaneous communications.

Two models are available; the TC-1, which is priced at $43.50, is powered and designed for use with Monitoradio Models MRC-10, MRC-33, and DR-200; the TC-2 is designed for use with Monitoradio MCA-100, from which it derives its power, and is priced at $37.50. These units can also be used with similar receivers of other makes.

This equipment, consisting of a tone switch to be attached to the receiver and a tone generator on the base station transmitter will allow selective calling of one or a group of receivers so equipped. The tone switches hold the receivers mute until the proper audio frequency tone is transmitted, at which time the tone switch responds and closes the receiver speaker circuit, allowing the message to be heard. Expressly featured in these tone switches are unique bridging and time delay circuitry which very effectively prevent false triggering from "stray" audio tones; thereby overcoming one of the most heretofore troublesome difficulties with such equipment.

The tone switches require no wiring or cutting into the set circuitry to install. They are small—only 3½" x 4¾" x 3½"—and attractively packaged.

The tone generators are made in models providing 1, 2, or 3 separate audio tones to allow for the alerting of up to three different groups from one transmitter.

Burton Browne Advertising

TG-3 monitoradio
Division of I.D.E.A., Inc.
7900 Pendleton Pike • Indianapolis 26, Indiana

TELEPHONE ALARM SYSTEM

Continued from page 720

lifts his receiver and is automatically connected to the command circuit to get the fire location as it is repeated by the dispatcher. The only hitch occurs sometimes when the fireman's telephone is being used for a long distance call routed through a manual switchboard instead of entirely dial equipment. Then it is necessary for the fireman to ask the operator to pull the plugs out so that his phone can get on the command circuit.

When all-dial equipment is used in completing a personal telephone call, then the calling party must hang up his telephone before the line is cleared for the fireman to get on the command circuit. If the fireman originated the personal call, he can get on the fire alarm command circuit just as quickly as he can hang up his phone and pick it up again. If someone called the fireman, then that person must hang up before the fireman's phone is free to join the command circuit.

Private line required

There is one restriction that the Southern New England Telephone Company puts on the installation of command circuit service to firemen's homes. The fireman must have a private line. This rule was made to avoid unnecessary ringing or a disrupting warning tone in the homes of other persons on a party line. However, if all the customers on a party line are firemen, there is some indication that the telephone company will waive its rule and give them command circuit service.

There is, of course, a distance limitation to the command circuit. But from a practical standpoint, it is negligible. The service can be made to any telephones in the same exchange, or even to any telephones in exchanges located in the same central office.

The limitation of 21 telephones on a command circuit keeps the circuit within the capabilities of the phone exchange's ringing equipment. For that reason, although three command circuits may be used by a fire department, only one circuit ringing lever may be depressed at a time. However, by using each ringing lever successively, all 63 phones are brought into simultaneous communication with the fire department dispatcher.

The command circuit alarm service inaugurated in Connecticut represents an important refinement of a system first used by the Mountain States Telephone Company in Colorado. The use of amplifiers by Southern New England Telephone engineers gave them their biggest advance—the satisfactory transmission level of the voice. The result was a better transmission level on the command circuit than between any two telephones connected to the same phone exchange.

In the central office, or telephone exchange building, a hybrid connection was used to tie in voice frequency amplifiers and a four-wire telephone circuit to the Glenbrook firehouse—the remote control point for this particular circuit. Incident-

ally, it is possible to have three remote control points.

The use of the two-way voice amplifiers and the four-wire line to the control point removed the singing from the line caused by changing load conditions. Also, the amplifiers maintain a lower level of transmission from the home phones than from the dispatcher's phone. This tends to keep the command circuit line quieter as numerous home phones with their background noises operate on the command circuit. But by keeping the dispatching phone transmission level a bit higher, the receiving fireman hears messages over home noises. It adds up to an efficient conversational circuit that can handle emergency conferences among fire officers as well as fire alarms.

The application of amplifiers eliminated one of the major barriers to efficient service—distance. During World War II, command circuit phone service was developed to allow officers in different locations on the same base to confer. The very fact that the phones were on the same base sidestepped the eventual problem of varying lengths of telephone wire from central office to firemen's homes. At first, it was necessary to keep the lines to somewhat equal length to minimize the variance in current drop. The introduction of amplifiers in Connecticut designs got around the line drop bottleneck.

Circuits may be selective

Because the distance from the telephone exchange building to a fireman's house is no longer a transmission problem, the men can be assigned to each command circuit according to the desire of the fire chief. He may have all his officers on one circuit so that staff conferences can be held by telephone without disturbing other firemen. A rescue squad, special service company or fire patrol can have one circuit to itself.

Inside the telephone company central office, the operation of the fire department dispatcher's lever activates a tripper relay that knocks off the regular ringing current. Then a transfer relay switches the individual firemen's telephones from private line service to the command circuit. If a fireman is using his telephone, then a busy test relay puts the special fire alarm tone, which was mentioned earlier, on his line to notify him that a fire call is being transmitted.

Once a fireman answers a fire call, a line supervisory relay acknowledges his action by permitting the telephone to disconnect from the command circuit with the hanging up of the phone. The private telephone is then back in general service.

All the relays, switches, wires and other components to handle the 63 telephones divided among three command circuits can be installed in one standard telephone central office relay rack bay about 11 feet high and 23 inches wide. Or to put it another way, it's approximately the same central office space required for servicing a 50 to 75-line PBX or private switchboard.

The reliability of the telephone fire alarm circuit is protected by several types of checks. First, there is a daily test at 8 p.m. each night when the Glenbrook

Hose **BRACKETS**

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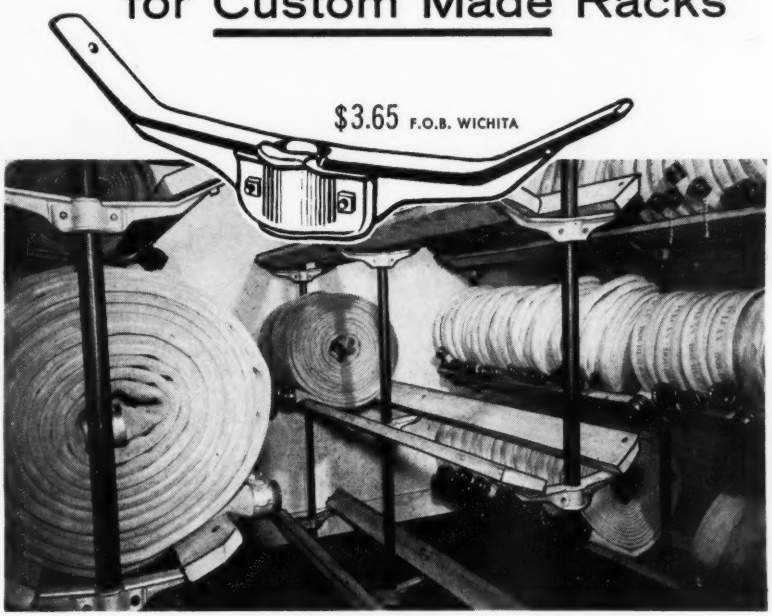

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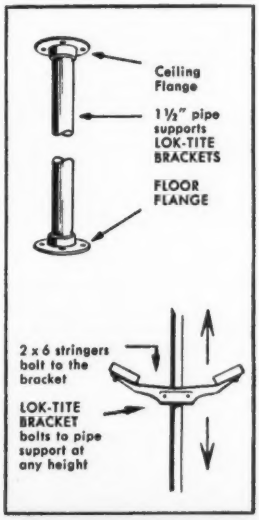
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Get smoke out, get air in

with Multi-Purpose

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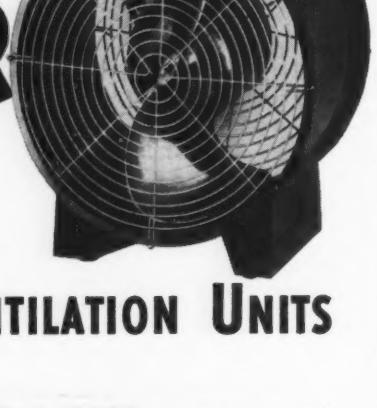

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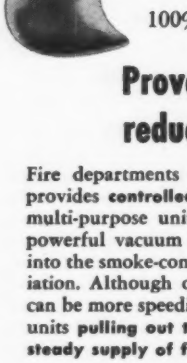

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Proved method of saving lives while also reducing smoke damage

Fire departments **nation-wide** attest to the speed with which Super Vac provides **controlled ventilation**... so necessary in modern fire fighting. This multi-purpose unit primarily (1) gets rid of smoke and fumes through its powerful vacuum action... or, (2) furnishes a tremendous blast of fresh air into the smoke-congested area, reducing the dangers of combustion and asphyxiation. Although one unit is often sufficient, **complete controlled ventilation** can be more speedily accomplished by using two or more units... one or more units **pulling out the smoke and fumes** while the remaining units **blow in a steady supply of fresh air.**

★ **Highly portable... operates in any position**
★ **Design permits vertical stacking**
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fire dispatcher rings all three circuits. As she announces that it is a test, the men answering their phones merely hang up. Once a week, a roll call test is made. Then the name of each fireman is called by the dispatcher over the combined three circuits and as a man answers "present" to his name, he hangs up his phone. In this test, not only does the fireman get a chance to see that his telephone is working, but the dispatcher gets a record of the men who responded. By this means, the fire department has a positive record that a member's telephone was operating on the last date he responded to a roll call. Conversely, an unexplained failure to respond can be checked out. Actually, a constant check of each fireman's telephone line is being run by his family in their daily calls. Any disruption in service would be noticed the next time a member of the household tried to place a call.

Each telephone on a fire alarm command circuit is specially identified by the telephone company to insure expedited repair service to get a faulty line back in operation. As far as the fire department is concerned, the maintenance problem is no more than a call to the telephone company's repair service. □□

QUINN SNORKEL

Continued from page 661

fire from an outside perimeter. Intense heat and smoke prevented them from getting in close, as the fire extended from stack to stack.

Arriving at the scene, the Snorkel quickly swung into action with Fireman (now Lieutenant) John Windle riding in the basket high above the raging flames. His turret, fed by four 2½-inch lines delivered water with amazing accuracy and within 30 minutes the fire was halted and the 4-11 struck out by First Deputy Fire Marshal James Bailey. The Snorkel did a remarkable job in extinguishing the flames and Bailey was able to send home all the extra-alarm companies shortly after their arrival. After the fire, Bailey, a veteran of over 30 years on the department, had nothing but praise for the Snorkel. He said, "I can't believe how quickly and accurately it worked. It really plastered this fire in a hurry." Fireman Windle said that he could see the fire in each pile and direct his turret to a burning stack, extinguishing the fire there and then moving on to the next one. Chief Fire Marshal Raymond J. Daly said that in his 33 years as a Chicago fireman, he never saw anything "as effective and maneuverable as the Quinn Snorkel."

Since that night, the original Snorkel has responded to almost 200 extra-alarm fires and has been called upon to render its service at more than 30 others. A few weeks after its first use, a two-day school was conducted for all chief officers in the department. Commissioner Quinn told the chiefs that if they needed it for any purpose, all they had to do was request it and the fire alarm office would dispatch it.

Chicago presently has three Snorkels in service, one spotted in the downtown

area, one on the south side and another on the northside of the city. Each responds to the "still and box" alarms in their respective districts. In the case of an extra alarm, a second Snorkel responds on a 2-11 and the third responds on a 3-11. Commissioner Quinn has plans to keep increasing the number of Snorkels until one is available to respond to all fires except automobiles and grass.

Snorkels are operated by two-man crews. All three have dual controls. One is set in the basket, so the fireman-operator has complete control. This permits him to swing the boom back and forth, up and down, to direct his water rather than move the turret pipe. As a safety factor, a set of identical controls have been placed at the base of the boom so the second crew man can also operate in case of an emergency. The Snorkels are capable of rotating 360 degrees at any height from ground level to their fullest extent. This feature makes them valuable regardless of the height of a fire.

Operators seasoned men

All personnel assigned to the Snorkels are seasoned fire fighters. The three officers, Lieutenant John Windle, Lieutenant Tom Wilson and Lieutenant Tom Connolly, hold honor citations for their previous fire duty exploits. All are former members of Rescue Squad 3, one of the busiest fire companies in the world. These men have played an important part in the success of the Snorkels.

A great advantage of the Snorkel is its capability of permitting a fireman to open dangerous truss roofs without ever getting out of the basket. If the roof gives way under him, the fireman still remains safe in his basket and can easily swing himself away from the fallen structure.

At a recent fire in a windowless cold storage plant, the Snorkel operator, unable to find any opening in the burning building, took up a power saw and hammer and cut an opening through the wall large enough for effective work. Firemen have available in the basket a 100-foot length of heavy-duty rope, an axe and a pike pole. While working, they strap themselves into the basket with a standard pompier belt.

Chicago still maintains three conventional water towers in service. However, their main purpose at a fire is to drown the blaze with thousands of gallons of water. This may result in heavy water damage if the fire is confined to the upper floors of a building. In most cases, a tower is placed in the street anywhere from 40 to 65 feet from the burning building. Once a tower is set up, it is very difficult to move it from one location to another. The Snorkels eliminate these problems. It can place its nozzle into a window or an opening in a wall or roof. In nine cases out of ten, its stream may be directed at the seat of the fire to extinguish the blaze with a minimum amount of water damage to building and contents. The Snorkel can also be moved around the fire building within a matter of a few minutes because of its quick-acting jacks.

At a 5-11 alarm factory fire at 2931 La

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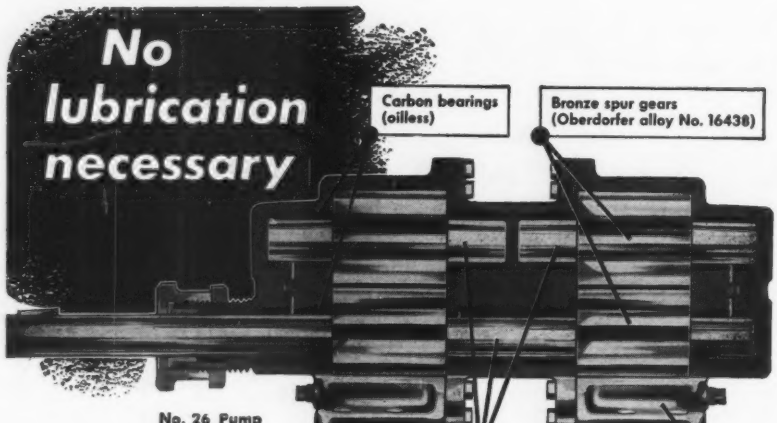
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Carbon bearings (oilless)
Bronze spur gears (Oberdorfer alloy No. 16438)
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Piston-finished stainless steel shafts
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OBERDORFER BRONZE BOOSTER PUMPS

These booster pumps with oilless bearings will last 3 to 5 times longer than the old style equipped with plain bronze bearings. As a result of closer machining tolerances, over 20 feet of suction lift may be depended on.

The No. 13 and No. 26 Oberdorfer Pumps are more fool-proof than they have ever been. When you get to a fire you have something you can count on. It isn't necessary to wear pumps out checking them periodically to see if they will work. These pumps are metering pumps in principle and therefore must produce the same volume for every revolution of the drive shaft.

PERFORMANCE DATA—No. 26 and No. 13 PUMPS

Pump No.	Pump Shaft R.P.M.	Pounds Pressure	Hose Length and Size	Dry Suction Lift in Feet	Vol. in Gal. Per Minute
26	1600	120	500'—1½"	20'	150
13	1600	120	500'—1½"	20'	75

LIST PRICES — No. 26 — $249.50 No. 13 — $122.50

Slightly higher west of Rockies

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P. O. BOX 473, NARBERTH, PA.

Salle Street, heavy rolls of paper were burning in the fifth floor and chiefs did not want to risk the lives of the men in the structure. But the Snorkel moved up to a window and paved the way for the men to get inside. A water tower throwing four streams from the street was not as effective as the single Snorkel stream.

A good example of Snorkel capabilities was illustrated at a difficult 3-11 alarm fire in a food company warehouse on the west side of the city. A four-story building, the fire was raging on the third floor, threatening to involve the fourth floor and possibly go through the roof. Two Snorkels arrived on the scene and quickly swung into action. Reaching the third-floor level, Lieutenant Windle in the basket of Snorkel 2 and Lieutenant Tom Wilson on Snorkel 3 broke all the windows on the fire floor, using a pike pole and axe to let out the heavy smoke and heat. Windle then put his turret pipe to work on the seat of the fire on the third floor. Wilson moved his Snorkel to the other side of the building and poured water in at that angle. Within a few minutes, the seat of the fire had been extinguished and only a minor amount was left burning. Then, instead of the firemen dragging their lines up the three stories, hose was placed in the basket of a Snorkel and shuttled up to the third floor for overhauling purposes. The fire never reached the fourth floor and water damage to the foods stored in cases on the first and second floors was practically nil. Because of quick maneuverability, not only to provide immediate ventilation, but to spot the seat of the fire and extinguish it just as quickly, serious loss to both the building and the foods stored within it was prevented.

Chicago's Mayor Richard J. Daley first saw the Snorkel in action at a 4-11 alarm fire which had totally involved a two-story factory building on Chicago's near south side. Watching it swing from window to window with its powerful stream knocking the fire down as it moved, Mayor Daley immediately asked Commissioner Quinn for a full explanation of the apparatus. This resulted in the mayor giving his permission to purchase two more Snorkels immediately. Delivered early in 1959 by Mobile Aerial Towers, Inc., and called "Hy-Rangers," they are a 65-foot and a 75-foot Snorkel. All are proving themselves at Chicago's extra-alarm fires.

Maneuverability unlimited

The Snorkels have been able to go to work on residential streets as well as on main streets. They are considerably shorter than the average ladder truck and their maneuverability is practically unlimited. The 75-foot Snorkel is capable of placing its basket up to a sixth-floor window. This, the tallest of the present units is stationed downtown. It already has been instrumental in extinguishing a 2-11 alarm fire on the top floor and roof of a five-story building.

The potential of the unorthodox apparatus in the field of rescue is tremendous. Each Snorkel has a different capacity for carrying persons. No. 1 can carry three, No. 2 has a capacity of six and the third

Snorkel can accommodate seven. All operating personnel are trained in rescue operations.

On May 18, 1959 a crowded elevated train rammed into the rear of another. This happened some 50 feet above ground level and there was no way to evacuate the injured persons other than by ladders. The fire department was summoned and Snorkel No. 3, located just a few blocks from the scene of the crash, responded. Upon arriving, Lieutenant Windle raised the boom to a door of the crippled train and began to help those who could walk into the basket. As soon as he got four persons aboard, he lowered them to the ground and waiting ambulances. This continued until over 60 persons had been removed, including a number of victims on stretchers. Doctors and first-aid equipment were raised to the train. The Snorkel also raised power tools to help firemen free persons trapped in the wreckage. As soon as the fire alarm office received a report of the conditions at the scene, another Snorkel was dispatched and it emptied another carload of victims.

After all aboard the disabled train had been led to safety, the fire alarm office received a request for an inhalator at one of the trains which was stalled behind the wreck. The office dispatched a fire department ambulance to the scene. Upon arrival, the ambulance crew reported to the fire alarm office that there was no way they could reach the stricken victim some 50 feet above the ground. Immediately a Snorkel was dispatched and the resuscitator and crew raised to the train. Oxygen was administered and the victim revived. A short time later, he was placed in the basket of the Snorkel and lowered to the ambulance below.

Possibilities unlimited

The Commissioner recently said, "Here in Chicago, we don't know just what these Snorkels can do. They have certainly proved themselves an asset to our department and it takes some imagination to realize just what they are capable of doing. They have handled everything we have thrown at them, and I can't believe other than that the machine definitely belongs in the fire service."

The Snorkel has proven itself under every possible condition it might possibly face fighting a fire and has passed all tests with flying colors. At the present time, the Pitman Company is manufacturing still another Snorkel which will include many new improvements.

The unique apparatus is not a cure-all and firemen still take a beating in smoky basements. On very large fires they still need water towers and high-pressure units to deluge the blaze. Even when the Snorkel does pave the way, they must go inside the building to overhaul the wreckage with hand lines.

But they can get in quicker now, and many a Chicago fireman has had a welcome gulp of fresh air after the Snorkel has opened a roof or reached in to stop a rolling fire. As one blueshirt explains: "We're never sorry to see that ugly thing come in and go to work." □□

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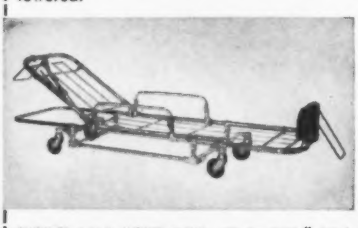

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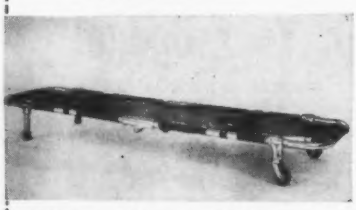

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the round table

discussion of current fire department and fire management problems

Alerting and Dispatching Fire Companies

THIS IS THE THIRD installment of the Round Table on systems for alerting and dispatching fire companies.

Readers are invited to participate in the discussion which will be continued in the September issue. Address replies to Round Table Editor, FIRE ENGINEERING, 305 East 45th Street, New York 17, N. Y.

The Discussion

J. P. Newark, Chief, Grand Forks, N. Dak.: We have only two fire stations in operation at the present time, and both stations are connected on a special telephone line known as the "fire phone line" and listed as such. When someone calls on this line, it activates a relay, which in turn rings a large bell operated by 110-volt a.c. current. These bells ring simultaneously at both stations and can be heard in any part of the stations. In case of a silent alarm, the personnel are alerted when the local gong circuit of our fire alarm system is tapped to notify the police and water departments that we are responding to a fire call. Other routine calls are announced over a P.A. system.

We tried out horns on the telephone circuit for several months and by request from the men, we went back to the bells.

The volume of sound probably would have more bearing on the speed of response than the type of alarm device.

We do not have any data on the subject of heart attacks being caused by warning devices.

If a revamping were contemplated, we would discard all large gongs and bells and install small tapper bells in various parts of the station. These would be operated from the watch desk. Upon receiving a fire call, the man on watch would tap the bells to alert the personnel and then announce his message over the P.A. system.

Charles R. Dorman, Chief, Jamestown, N. Y.: We use bells for notification of alarms and prefer them to other means. At one time, we had a horn in one of our stations and removed it as the personnel thought it was more of a shock than the bell. As long as the device used is loud enough to be heard over other noises prevalent in stations, repair work, etc., I do not believe speed of response is affected by the type of device.

At the present time, we are installing station house receivers, which will be operated by selective call equipment. These will not supplant our regular bells but will be used as an adjunct to them. These receivers will be equipped with wall vibrators or klaxons, depending on the type of station, to notify personnel the receiver has been put in service by selective call from the alarm office. This equipment will also be used in transferring calls to surrounding volunteer departments, or in calling them to assist with large fires within the city.

William M. Daly, Commissioner of Fire, Buffalo, N. Y.: We use a voice amplifier system with secondary confirmation on bell and tape.

We believe the speed of response is affected by the type of alarm device used.

There are no statistics available in our department to show the relationship between sharp warning devices and the incidence of heart conditions.

We are more than satisfied with our present system and contemplate no changes.

Howard Dey, Chief, New Orleans, La.: In our department, we use the alerting tone on radio console for notifying personnel.

We favor the use of bells over other devices.

We do not believe the speed of response is affected by the type of alarm device used.

We believe there is a relationship between sudden, sharp warning devices and the incidence of heart conditions and

THIS MONTH'S QUESTIONS

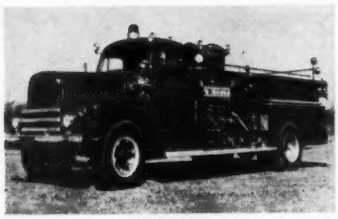
What method is used to notify personnel in quarters of an alarm?

Do you favor the use of bells in preference to chimes, gongs, or horns?

Do you believe the speed of response is affected by the type of alarm device used for alerting firemen?

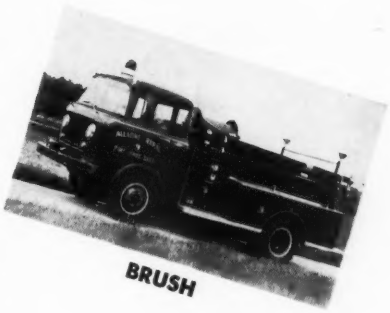
Is there any evidence available in your department to show a relationship between sudden, sharp warning devices and the incidence of heart conditions? If so, will you briefly outline the nature of this?

If you were to revamp your present alerting system, what changes in equipment and procedures would you make?



PUMPER

CRASH-FOAM



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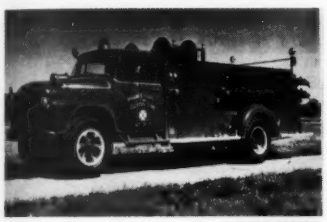

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have several heart cases attributed to this source.

We have changed from the old house gong to alerting tone on radio, such as: one-tone denotes one company response; two-tones denote box alarm, also extra alarms. This has worked out satisfactorily to date.

N. L. Wheeler, Chief, Miami, Fla.: We use a bell and light system of notification.

We favor the use of bells in preference to other methods.

We believe the speed of response is affected by the type of alarm device used for alerting personnel.

There is no evidence available in our department to show a relationship between sudden, sharp warning devices and the incidence of heart conditions.

Glen J. Davis, Chief, Beloit, Wis.: Personnel are alerted by means of a fire alarm bell, using the telegraph key in the watch room, and by an intercom system.

In our department, we favor the use of bells.

We believe the speed of response is affected by the type of alarm device used for alerting personnel.

There is no evidence available in our department to indicate the relationship between sudden, sharp warning devices and the incidence of heart conditions.

No changes are contemplated at the present time.

Cecil Lochard, Chief, Alhambra, Calif.: We use three fire alarm telegraph bells, followed by the location over the vocal alarm.

We believe bells are a more positive alert.

We believe the speed of response is affected by the type of alarm device used.

In our department, we do not know of any heart conditions being brought about as the result of sudden, sharp warning devices.

If changes were contemplated, we would use more 6-inch gongs in lieu of a few 10-inch gongs.

Sylvester E. Jennings, Chief, Bridgeport, Conn.: When an alarm of fire is received at fire alarm headquarters, the operators on duty press the key of the talk-alarm button with their hand to open the circuit for audio transmission of the voice alarm, and at the same time, press a foot control for the operation of the three-way radio. They then announce Signal 29, which means an alarm of fire is to be transmitted. Then the howler horn blows for about 10 seconds, followed by voice announcing a fire is reported at such an address, nature of fire, and number of box being transmitted. After voice transmission ends, box number for fire is set up on telegraph transmitter and sent over fire alarm telegraph to all houses.

The first indication of fire to the men in engine house is by voice amplification and backed up by horn and bell because men are awakened by voice signal 29 and horn and bell strike out box number.

The response is unquestionably speedier because all men hear the announce-

ment of exact location of fire, nature of burning and material, or whatever other information is available.

For the past 20 years, we have been operating on a reduced shock system of transmission of alarms of fire.

If changes were contemplated, we would only modernize the electronic system equipment, with no recommendation for changes in method of transmitting an alarm. The lights in all engine houses are automatically switched on in bunk rooms and apparatus floors.

Frank S. Sandeman, Chief, Long Beach, Calif.: On any emergency alarm, we give a two or three-second tone signal over the public address system to signify an ultimate gong signal.

We favor the use of bells over other methods, providing a warning is given first to alert personnel.

It has been definitely proven during the 10 years this department has used the preceding tone signal, that faster response, more alert and relaxed personnel, and safer operations have been the result.

We have not compared records that would indicate a decrease in heart disease by using tone signals, but we do believe it to be a fact.

We do not have any recommended changes over our present system at this time.

C. N. Penn, Chief, Dallas, Tex.: We use a horn-like tone, which is sent through the public address receivers of the stations affected. This tone will ordinarily alert everyone. The watchman on duty sounds the house bells to further alert any sound sleepers.

A combination of horn and bells is our preference, rather than bells alone.

We believe the speed of response is affected by the type of alarm device used.

A great number of firemen will admit that a sudden awakening from a sound sleep causes their hearts to beat more rapidly. This is most noticeable in a multiple-company station when all are alerted and some remain at the station. Those who remain at the station, report their hearts beat very rapidly for a few minutes. While we have no record of anyone having suffered a heart attack at the time of the alert, it is reasonable to presume that an additional load is put on the heart.

Our system has just recently been revamped.

A. McMarsh, Chief, Columbia, S. C.: At the present time we have two methods of notifying personnel in quarters of an alarm. The gongs of the box system sound automatically in the dormitories when a box is pulled; a buzzer is sounded by the fire alarm operator for telephone and all other calls.

I would prefer to keep the gongs for box system and the buzzer for all other type alarms.

I do not believe the speed of response is affected by the type of alarm device used, for a person will awaken just as quickly by the sound of one device after he has become accustomed to it.

There is no evidence in our depart-

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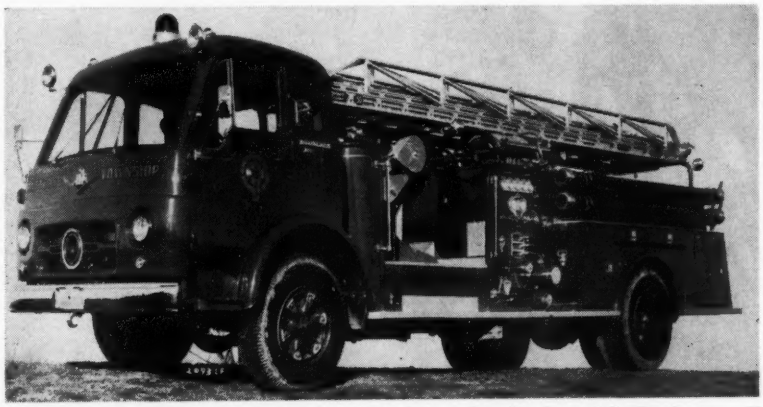
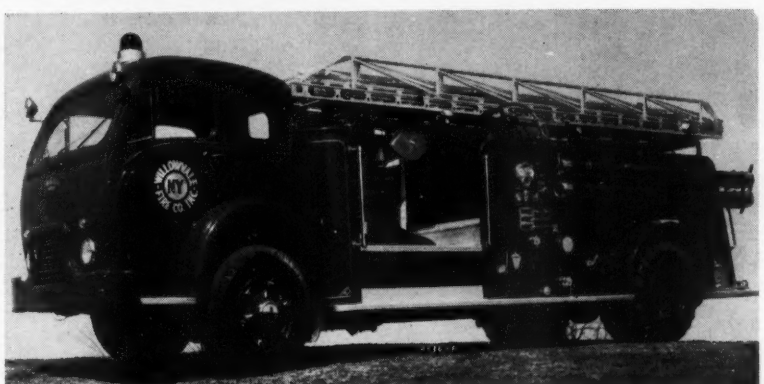


This job, on an International Harvester chassis, built for Patterson Township, Beaver Falls, Pa., features a 50 foot MEMCO AERIAL LADDER

This job, on a Ford chassis, built for Big Rapids, Michigan, features a 65 foot MEMCO AERIAL LADDER



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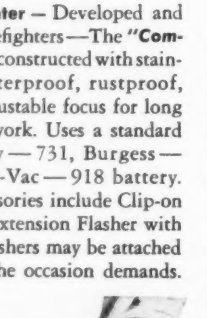

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SOLID PROPELLANTS

Continued from page 663

sources such as friction heat, static electricity, shock, or compression.

Choice of extinguishing media

Considering the fire triangle with its elements of fuel, air, and heat, the extinguishment principle most suitable for solid propellants is determined by their peculiar characteristics. Since their combustion cannot be stopped or restarted like that of liquid propellants, elimination of the fuel is not practicable. Removal of air is not effective because they contain their own oxidizers, and many actually are intended for burning in an airless atmosphere. The only means of extinguishment which appears feasible is reduction of the temperature. Cooling is also effective for prevention of explosion or detonation, because when propellant compositions are heated, such as by exposure to radiant heat from an adjacent fire, the chemical reactions of the material can be greatly exaggerated—possibly to a rate where detonation can occur.

Where cooling is required, it seems only natural to think of our old friend, water. With but few exceptions, water has the highest heat-absorptive capacity of liquids. One gallon of water applied at 50° F. and evaporated into steam at 212° F. absorbs nearly 9,500 Btu. It is interesting to note that maximum effectiveness in the use of water for cooling requires the vaporization of the water into steam, because over 8,000 of the 9,500 Btu are required to convert the water to steam after its temperature has reached the boiling point. Other obvious advantages of water, its comparatively ready availability, low cost, and suitability for continuous supply, lead to its preference for fire protection use.

A possible disadvantage of water, its incompatibility with some of the propellant ingredients such as powdered metals, should be considered. The use of water on powdered metal fires would not generally be recommended because of its agitating action and explosion potential. However, the advantages of water outweigh this disadvantage, in the case of propellant material in which the powdered metal is a part of the heterogeneous mix.

The hazard potential dictates the method of utilizing the water. With such extreme heating values, it is necessary that efficient application methods be used in order to get the maximum cooling benefit from the water. Split-second operation is essential because of the rapid burning rates, early development of the heating values, and the need for preventing explosion or detonation. Manual application of water would not be adequate for these reasons, in addition to the severe hazard to personnel. Therefore, fixed, permanent, installations are necessary for the proper use of the water.

Turning to historical record, and the proven success of automatic sprinkler systems since their introduction in the latter part of the 19th century, it is only logical that this work-horse of fire protec-

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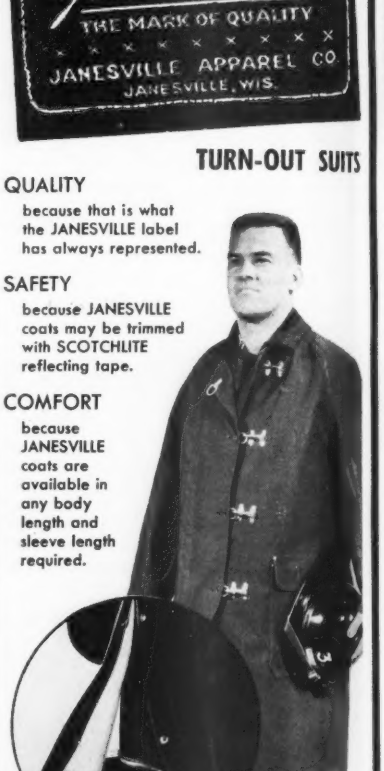

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tion be adapted to the modern propellant hazard. With modifications to meet water demands and unusually fast operating requirements, the deluge type sprinkler system has come forth as a "high-speed, preprimed," deluge system to cope with the hazards of propellants.

System design features

There are several unique features of high-speed, preprimed, deluge systems which distinguish them from ordinary deluge systems. These may be classified as general features, detection and actuation methods, and application techniques.

The most important general design feature is the subdivision of the systems to the smallest practicable size. A separate system for each "heat-influence" area is preferable. A heat-influence area may be considered as that which would be immediately subject to the heat from a fire, and is relatively small in size. Since a heat-influence area is not necessarily defined by fire walls or other physical fire cut-off facilities, its boundaries are determined by judgment, based on the nature of the propellant material. Subdividing the systems increases their costs, but it is necessary in order to reduce the operating time to a level allowing adequate fire protection. Also, the cost increase from the larger number of deluge valves is somewhat offset by the reductions in the size of the system piping and the length of the detection circuits.

Another general feature is the arrangement of the system for minimum blast damage, in order to allow continued operation after a deflagration. The ability of a system to continue to discharge water is of vital importance for aiding life safety, protecting the structure and equipment, and cooling down other propellant material in the area. For example, in one deflagration which was experienced, the sprinkler system was extensively damaged but was able to discharge enough water from the broken piping to protect an injured employee from the fire and to prevent the involvement of several hundred pounds of propellant material.

Blast-resistance may be improved by supporting the piping from structural elements likely to withstand the deflagration, such as main columns and beams or floors. Since these areas in the plants concerned have little personnel traffic, running the piping along the floor is usually not objectionable from the tripping standpoint. Designing the building with adequate explosion relief facilities to minimize structural damage will greatly increase the blast resistance of the sprinkler systems. Other factors include eliminating weak piping elements such as cast-iron fittings, and providing flexibility in the piping, such as by swing joints or flexible couplings where practicable. In the example described above, the reason a portion of the sprinkler system continued to function after the deflagration is that a swing joint at the top of the main riser allowed the cross main to deflect with the roof. Although the branch lines were separated from the cross main,

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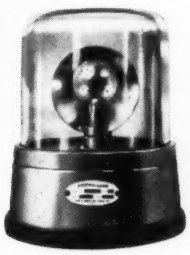

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water was discharged from the broken riser nipples on the cross main.

Another general feature worthy of note is the provision of adequately sized floor drains or wall openings to prevent deep pooling of the water in areas occupied by people. Although remote, there is a potential drowning hazard to an injured or unconscious person.

Special detection and actuation methods are necessary in order for the system to operate within a required 0.5 second. A supervised thermo-pneumatic type detection system is used, based on the rate-of-rise principle with fixed temperature back-up. This system uses heat responsive devices, which are the heat collectors, arranged on circuits of small-diameter metal tubing. A supervisory air pressure of about 24 ounces is retained in the tubing, and when the heat collectors are exposed to heat, the resulting increase in the internal pressure actuates the system by a release mechanism.

Several methods are used to attain high speed operation. The number of heat-responsive device circuits is minimized. (The optimum situation would be one deluge system with a single circuit, for each heat-influence area.) Heat-responsive devices per circuit are limited to two, or if all are in the same heat-influence area, three are allowed. Individual circuits are arranged to protect only one heat-influence area. In a small heat-influence area, or "spot" hazard, where one heat-responsive device would normally suffice, an additional device is provided. This increases the sensitivity by exposing a greater heat-collecting area. Also, the heat-responsive devices are positioned as close as possible to the hazard, located so as not to interfere with the water discharge, and they have heat baffles to increase their effectiveness.

Unique sprinkler system

The nature of the hazard calls for application techniques that are also different from the ordinary deluge system. A discharge density of at least 0.5 gallons per minute per square foot of area is required in the room, and greater densities are necessary for concentrated quantities of propellant. The process equipment is protected by nozzles of proper flow capacity and discharge pattern to provide a "cone of protection" of water spray at the required density. The structure is protected by sprinkler heads spaced for the density needed. Although the desire is to extinguish the propellant fire, as was actually accomplished for the earlier compositions, the confinement of the fire to the propellant itself, and cooling of the propellant material to prevent detonation, are considered satisfactory goals for the newer combinations. The systems are designed by hydraulic calculations to meet the water demands.

For split-second application of the water, several techniques are used. The entire system is primed at a low pressure with water, to avoid the delay which would result from filling of the piping. Since water is not compressible, admission of the higher pressure water from the supply by operation of the deluge valve immediately discharges water from

the system. The nozzles and sprinkler heads are the open type, but are fitted with small plugs which are specially designed to relieve at a pressure slightly above the priming pressure. With the piping water-filled, it is necessary to arrange the water motor alarm line to retain the priming, and the deluge valve must be a type factory-equipped with a closed drain for the space above the clapper. Other high-speed features include locating the deluge valve as close as possible to the hazard, but preferably protected or at least beyond the heat-influence area, and locating the nozzles as close as possible to the propellant material, allowing adequate throw for the development of the cone of protection.

Test methods

It generally is not practical to test the systems by creating a propellant fire. Simulation of such fires by tests with small quantities of propellant material are of questionable reliability because of the difficulty to extrapolate the data or to correlate the results with full-size potentials. Since the rate-of-rise principle is based on a rate of temperature increase rather than a fixed temperature, testing does not require duplication of the expected combustion temperatures. Sudden immersion of the heat-responsive devices in boiling water is adequate to test the rate-of-rise operation.

Timing of the tests, however, presents problems. There are inherent delays in the equipment, such as approximately one-fourth of a second for the deluge valve weight to fall, and there are errors and reaction times on the part of the test operators. Use of a stop-watch calibrated to tenths of a second does not allow the degree of accuracy desired, but after one becomes experienced in the testing procedure it will serve as a ready and easy field test method of gauging the adequacy of a system. Some success has been obtained with an electric timer calibrated in milliseconds, but there is need for further improvements in the test methods.

Results

One illustration shows an older type propellant grain which was ignited accidentally during its processing. The fire was completely extinguished by the sprinkler system. On present propellants, there has been a great deal of success in confining the fire to the grain in which it originates, so the amount of loss is limited to the value of the grain itself. As mentioned earlier, even in the case of a severe deflagration which caused major structural damage, the sprinkler system was effective in protecting personnel and preventing involvement of other propellant material. By the proper design of the sprinkler system and the provision of adequate explosion relief facilities for the buildings, the degree of protection afforded will be further improved.

Challenge of the future

It is probable that the hazard potential of solid propellants will increase as

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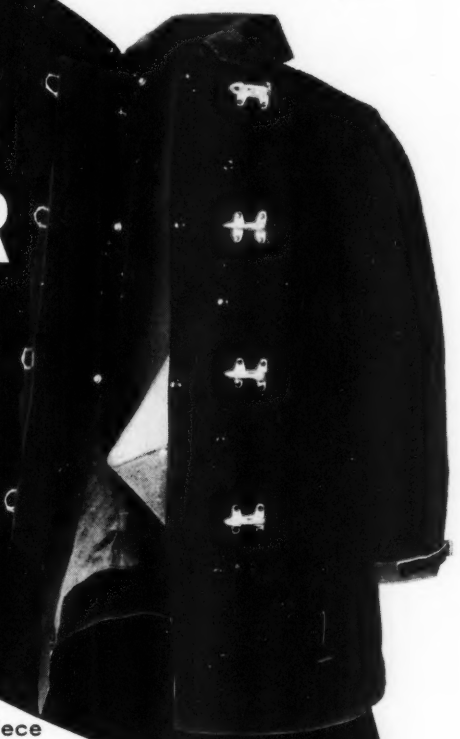

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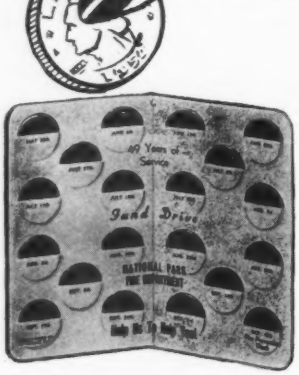

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continued efforts are made to improve their energy yields. Already planned are individual propellant grains which are measured in numbers of tons, and further developments are expected which will create fire protection problems because of the large grain size and complex configuration of the burning surfaces. Likewise, heating values, combustion temperatures, and burning rates will probably increase.

These changes will challenge the fire protection field. There will be greater need for research in many areas. The use of other extinguishing media must be investigated further. If water continues to be the best method, realistic water demands and operating requirements must be determined for the new hazards. Improved application methods will be needed for the larger and more complex propellant grain shapes. Faster detection methods and elimination of equipment delays are prime targets, with possible solutions including the use of infra-red sensing devices to operate powder-actuated deluge valves or other near-instantaneous discharge devices.

The fire protection engineering profession will have to meet these problems and overcome them. The extreme hazards, severe loss potential, and strategic importance of the solid propellants will demand it. □□

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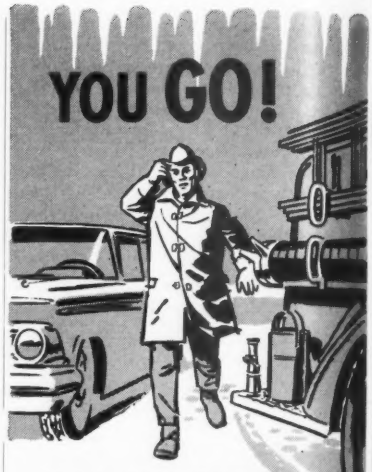
June Fire Losses

Estimated fire losses in the United States during June amounted to $77,867,000, the National Board of Fire Underwriters has reported.

According to Lewis A. Vincent, NFBU's general manager, this $77,867,000 loss represents a decrease of 13.5 per cent from losses of $90,048,000 reported for June 1958, and a decrease of 4.6 per cent from losses of $81,597,000 for May 1959.

Losses for the first six months of 1959 now total $560,866,000, a decrease of 3.5 per cent from the first six months of 1958, when they amounted to $581,235,000.

These estimated losses include an allowance for uninsured and unreported losses.



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PROPANE TANKER EXPLODES

Continued from page 688

The explosion was heard in Hamburg more than 9 miles away, and volunteer firemen from that community came in their personal cars to help. Meanwhile, the Schuylkill Haven Fire Department under Chief Paul Hinnershitz arrived with a truck from Liberty Hose and one from Rainbow Hose, in response to Chief Marotte's call for aid. The fire was extinguished immediately after the explosion, and the firemen then aided rescue workers in rushing the injured to hospitals and in taking the dead to mortuaries for identification.

Fire marshals from the Pennsylvania State Police began an immediate investigation. State Police Commissioner Frank G. McCartney went to the scene on the evening of the explosion to confer with officers in charge of the investigation.

Heat caused failure?

Commissioner McCartney expressed the belief to FIRE ENGINEERING that the tank was subjected to undue local heating from burning gas which escaped from piping and connections damaged in the collision. Failure of the rear segmented portions of the head, especially in the lower left section, seemed to indicate that the shell surface was subjected to excessively high temperatures. These were probably caused by the flaming propane gas impinging on that portion of the container shell. The commissioner stated that inasmuch as the leaking propane continued to burn for approximately 45 minutes, it can be assumed that the three 1¼-inch safety valves on the container were adequate to relieve increased pressure in the container. However, the localized heating at the lower portion of the rear head was sufficient to cause weakening of the walls and start failure of the container at that point. Since the container had been subjected to severe fire for approximately three-quarters of an hour, it is probable that practically all the liquid had been vaporized in the container. This theory would then indicate that the skin temperatures on the containers had permitted the steel to weaken sufficiently for the ensuing rupture. □□

Bus Crashes Into Firehouse Damaging Two Apparatus

A dump truck loaded with top soil careened out of control down a steep hill in Haledon, N. J., hurling a bus into the Haledon firehouse on July 20. Nine persons were injured and two pieces of fire apparatus were damaged when the bus crashed through the firehouse wall. Police said the air brakes on the truck failed. The bus traveled nearly 400 feet from where it was hit, crashed through a metal sign board and tore a hole in the firehouse wall. Bricks fell on one engine and a whole section of the wall collapsed on the other. Both apparatus had to be put out of service.

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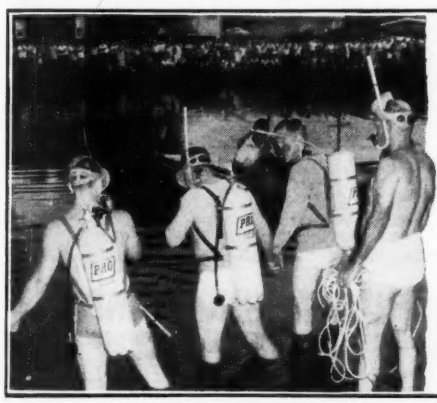

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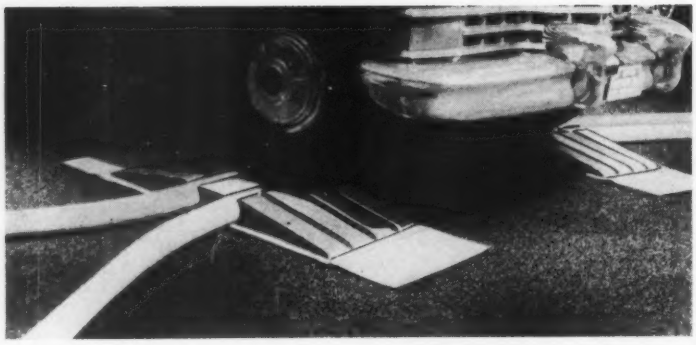

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CHEMICAL LABORATORIES

Continued from page 677

who handles the work, as necessary, in addition to his regularly assigned detail. Boston's lab, under the direction of the head of the fire prevention division, is staffed by a civilian graduate chemist with an assistant who usually is a "light house duty" fire fighter. The Detroit Fire Department's chemical laboratory is manned by Senior Chemist Robert C. Lyons who has a bachelor's degree in chemical engineering. The fire laboratory of the City of Los Angeles is a unit of the fire prevention bureau, under the engineering and investigation section. It is staffed by members of the technical and engineering units of the bureau, under the supervision of a battalion chief. Two members have a college background in science and another is currently studying for his degree.

Mr. Lyons considers it very important for the man in charge of the chemical laboratory to have a college degree, majoring in chemistry, and to have five to 10 years experience in fire protection work. Such a man will be readily recognized by both court and jury as an expert in this specialized field, and his testimony will receive due respect.

Work of the lab

The work of a fire laboratory covers broadly fire investigation, arson investigation, fire prevention and fire research.

Fire investigation embraces the technical investigation and determination of fire causes. The object is to eliminate hazards and to provide the necessary background information for enactment of laws and ordinances.

Arson investigation includes the collection, analysis and preservation of evidence, and the related legal laboratory reports and expert courtroom testimony.

The fire laboratory is a valuable adjunct to fire prevention by providing laboratory and field tests of flammable liquids and other flammability tests, gas leaks, temperature measurements and ventilation. The Boston laboratory, for example, tests plastics and other building materials submitted by the building department before a permit is issued for their use in construction. It also tests all upholstery and drapery plastics and fabric samples for compliance with law and state regulations, before installation in public buildings.

As part of fire research, the laboratory investigates and tests for combustibility and flame-spread characteristics of materials used for clothing, furnishings or construction. This phase also covers tests for fire department approval of devices such as nozzles, valves, etc. The laboratory also researches and reports on new fire problems such as amateur rocketry and new chemicals. The Los Angeles fire laboratory, through the fire prevention bureau library and extensive chemical files, is on call at all times for fire suppression information on chemicals.

Provision was made for a chemical laboratory in Portland, Ore., fire headquarters, but to date, it has not been equipped as such. Several men in the de-

partment have degrees in chemistry, when funds for staffing and equipping such a laboratory are available.

At present, Portland's equipment is of a mechanical nature, consisting of gas-ometers, open and closed cup testers, portable ultraviolet lights, an ohmeter for testing hospital surgeries, pyrometers, portable and fixed voice recorders, projectors, cameras and a lie detector. Chief Investigator C. W. Stickney of Portland's fire prevention division reports that this equipment is used largely for fire and arson investigation.

Substitutes for a lab

Of these departments which do not maintain their own laboratory, some contract out to private agencies any chemical analysis necessary. This is the policy, for example, of Phoenix, Ariz.

It appears, however, that most departments which do not have their own facilities depend on other governmental agencies. Seattle, which reports that it finds the need for a chemical lab very infrequent, has access to the city laboratory if necessary. San Francisco also uses the services of other city agencies when necessary. Most of Oakland, Calif.'s work is sent to the State Criminal Investigation and Identification Bureau in Sacramento. The Oakland Police Department and the state fire marshal's office in San Francisco have small laboratories, and the Oakland Fire Department makes some use of these facilities.

While Utica, N. Y., has frequently used the New York State Police laboratory at Albany, this department is fortunate in also having the voluntary services of Gustav W. Pirk, chief metallurgist, research center, Rome Cable Corp. During the past 20 years, Mr. Pirk, a good friend of both the fire and police departments in Utica, has devoted a great deal of his time to analyses for arson and other fire investigations.

The Newark, N. J., Fire Department enjoys the full cooperation of the Newark police laboratory. Chief Chemist William R. Seligman does a large amount of work for the fire department. He regards as one of the most important phases of this work warning firemen of the hazards certain new chemicals pose for them. Several years ago, Mr. Seligman made extensive research on the toxic hazards of plastics and submitted a detailed report to the fire department. His office, located in the police-fire academy, is also an information center for students.

Mr. Seligman suggests that, in those communities which have police laboratory facilities, the fire department utilize them either on a cooperative or merged basis. He notes that, since in all probability police laboratories outnumber fire laboratories, particularly in the smaller cities, the cost of establishing new fire laboratories could be avoided and the experience and training of the available police laboratory personnel be utilized in this manner. It seems to the writer, that some fire chiefs might prefer to have qualified fire personnel detailed to the police laboratory to handle the fire department work because of their back-

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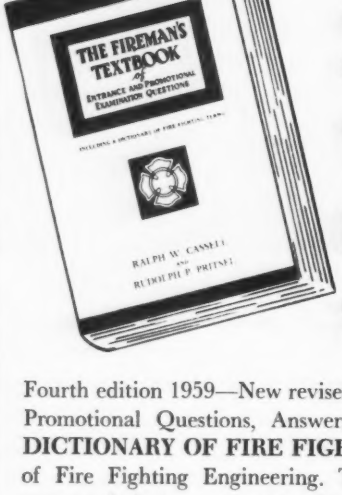

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ground in fire prevention and fire extinguishment.

Mr. Seligman also suggests that established laboratories in the larger cities could offer their services to surrounding smaller communities either on a cooperative or fee basis.

During World War II, New York City maintained a mobile fire, gas and chemical laboratory, fully equipped to detect and analyze dangerous fumes and gases. This package-delivery-type truck responded to all multiple-alarm fires south of 59th Street, Manhattan, but could be special-called anywhere in the city. The mobile laboratory operated in conjunction with a research laboratory and technical library located in the quarters of a downtown engine company. The staff consisted of uniformed fire fighters with very good chemical backgrounds and considerable fire fighting experience.

Today the New York Fire Department avails itself of the Central Testing Laboratory of the Department of Purchase. This is an engineering and industrial laboratory equipped to make a wide variety of physical and chemical tests. The Central Testing Laboratory serves approximately 25 city agencies, and its primary function is to test materials purchased by the city for compliance with specifications. This laboratory tests about 1,000 samples annually for the fire department, consisting of flammable materials for permit purposes, and on occasion, for arson evidence. When necessary, a representative testifies in court.

While Memphis, Tenn., does not maintain a chemical laboratory at present, it is contemplating having one in the near future. Chief G. C. Ulrich of the bureau of fire prevention of the Buffalo Fire Department also expresses the hope that his department will one day have such facilities. "There is no question but what such a laboratory would be a tremendous help to this office," he writes.

Possibly the best recommendation for such a laboratory is the opinion of a fire chief who has experienced its benefits. Chief Keith E. Klinger of Los Angeles County writes, "We feel that a laboratory such as ours is well worth the expenditure and time involved to be able to make physical tests of the many and varied products used by the public today, assist in our fire investigation activities and help plan sensible fire prevention for the industrial plants in our jurisdiction." □□

Crowd Argues While Boy Dies

An excited crowd of anxious spectators hampered rescue efforts and may have caused the death of David Laur, 8, who was pulled from Shadow Lake near Stouffville, Ont., on July 19. As one man, Frank Samon, Jr., of Toronto, attempted to use mouth-to-mouth resuscitation, the crowd shoved aside a young lifeguard, Emmett Shundoff, standing beside him and pushed Mr. Samon away. An argument over the best method of resuscitation than ensued and while the crowd milled about, the boy died.

STATION WAGONS

Continued from page 675

emergency calls. According to last reports, the standard rescue truck is held for fires and special emergencies and when in service, is operated by men drawn from other units. It is said the revised procedure has practically done away with former response of costly fire apparatus, including rescue trucks, to run-of-the-mill emergency cases. The department can effectively handle a larger number of emergency calls with greater facility and economy than before the station wagon squad was adopted.

Auxiliary Squad Cars: Faced with the acute shortage of manpower, some cities are installing special squad companies to speed personnel to areas known to possess high life and property hazards, or to large-scale emergencies. The modern station wagon, which can seat up to nine men including driver and officer, together with a minimum of first-aid fire fighting equipment, offers one answer to this problem.

Communications H.Q.: The station wagon, with some alterations, depending upon the extent of services it will be called upon to perform, makes an excellent communications and command H.Q. vehicle.

Fire Prevention Units: In the broad field of fire prevention, the station wagon offers greater flexibility than the passenger car sedan for movement of personnel and material such as printed matter, motion picture equipment, etc., necessary for educational purposes. At the same time, by equipping wagons in the fire prevention bureau or division with basic fire fighting and first-aid equipment, the personnel are qualified to meet and cope with minor emergencies encountered during their routine inspection tours. Much the same can be said for the operation of the arson squad.

Photographic Units: Nearly all municipal fire departments of any size have a photo unit. But few of them equip the photographer, or photographers, with the means of effective transportation. The station wagon is proving ideal for this important fire department undertaking. The New York Fire Department's photography unit has its station wagon promptly on the scene of every multiple-alarm fire and special emergency. In addition, it serves practically every other branch of the department.

Maintenance Units: The problem of fire department maintenance has steadily grown more complicated, with enlargement of the departments, greater complexity of apparatus, the introduction of new fire fighting equipment, and the difficulty of getting and holding trained maintenance men. The station wagon is playing its part in helping to solve this problem by taking men right to the fire stations for service.

The station wagon is facilitating field contacts, inspections, trouble shooting and supervision of operations at serious

KOHLER ELECTRIC PLANT

for fire truck floodlights

Visit our exhibit at the
INTERNATIONAL ASSOCIATION OF FIRE CHIEFS CONVENTION
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Model 10R61
10 KW, 115/230 volt AC. Remote start.

Mobile lighting for night fires is amply provided by this Bethpage, New York, floodlight unit, with current supplied by a reliable 10 KW Kohler electric plant. Kohler models offer quick-starting, rugged power for rural and city fire department trucks. Larger, stationary models maintain alarms, communications when emergencies cut off normal electricity. Sizes to 100 KW, gasoline and diesel. Write for folder E-15.

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JOHN KENNEDY
Chief Special Agent of
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A nationally known fire investigator who has trained many firemen including the
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FIRE and **ARSON INVESTIGATION COURSE**
Is now available by
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Graduates of this course are at present conducting investigations for:

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Police Officers, Firemen, Insurance Adjusters and Investigators have been trained in this course.

We will now accept enrollment from qualified adults who wish to train by correspondence for employment in the Fire and Arson Investigating Field

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emergencies. It is also finding ready acceptance as a general utility unit.

Forestry Services: One of the first of the fire fighting forces to appreciate its possibilities was the forestry service. Station wagons are in use as command and communications cars, utility and supply, medical and first-aid vehicles, and in other capacities. One California forest ranger, whose district covers several counties, comments, "Next to my Piper Cub, my station wagon is my most valuable asset."

Summing the advantages

Briefly, one might summarize the advantages of the station wagon as follows: (1) Low initial cost compared with certain other types of motor vehicles which are reported capable of performing the same tasks; low replacement costs; and (2) Economy of operation, maintenance and upkeep. Small departments have little difficulty finding service available at all times, whereas with some other larger, heavier and more specialized equipment, service facilities may be limited.

Special alterations

We have mentioned structural changes to adapt the standard station wagon model to meet the special tasks for which it is intended in the fire department. In general, these alterations or additions concern load factors, and for the most part, they are simple in nature.

When the San Diego Fire Department, Chief George Courser, decided to install station wagons in all battalions and to outfit each vehicle with emergency fire fighting and first-aid equipment, tests were conducted by the superintendent of maintenance to determine load limitations, stress on chassis and other factors. The result was a decision to substitute heavy-duty springs and shock absorbers for the car manufacturer's standard springs; to add alternators and heavier batteries and to make one or two other minor changes. Regulation flashing and fixed fire department lights and siren were added.

One other feature was installed in the San Diego units. This was a public address system so connected that it can broadcast the driver's command as well as messages over the car's radio when the receiver is left unattended.

An important detail of installation is the placement of the car radio receiver and any other electronic gear. Although the problem is less acute, with the refinement and simplification of modern radio equipment, safe and accessible installation has usually presented difficulties in most types of motor vehicles, particularly where considerable gear must be carried in the same compartment.

San Diego overcame this handicap by installing its units on special brackets so mounted that removal of any or all of the various equipment in the cargo space cannot interfere with the radio installation.

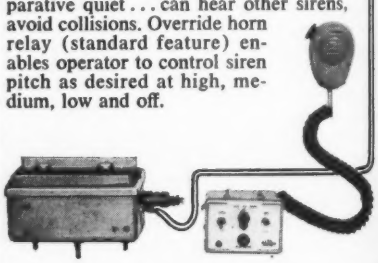
The amount and variety of fire fighting and first-aid equipment carried on the ve-

NEW! PENETRATOR®

Electronic Siren
P.A. unit and radio amplifier

BEAMS SOUND AHEAD ...UP TO ONE MILE!

Penetrator's powerful 50-watt electronic siren projects sound or signal up to 1 mile, to arouse, forewarn, protect! Because 90% of sound is beamed ahead of emergency vehicle, driver sits in comparative quiet . . . can hear other sirens, avoid collisions. Override horn relay (standard feature) enables operator to control siren pitch as desired at high, medium, low and off.



On scene, Penetrator serves as an authoritative high fidelity public address system for controlling crowds, riots, parades, directing fire fighting, rescues, civil defense. Penetrator also ties into vehicle's 2-way radio to amplify incoming messages.

Compact control box—only 4 15/16" wide, 3 3/16" high, weight 12 oz.—is easily mounted anywhere handy on dashboard. Air-cooled, 9-transistor amplifier fits concealed between radiator and grill or below dashboard. Penetrator operates on extremely low battery drain of 4 amps. All components are electronic, vibration-free, weatherproof . . . guaranteed 90 days!

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hicles vary with local needs and limitations. The battalion station wagons of the San Diego Fire Department pack the following: Wool blanket, box of records, one 2½-pound carbon dioxide extinguisher, explosimeter, first-aid kit, hand light, six red flares, one telephone set (alarm box use), two pairs canvas gloves, 6-foot folding rule, three sprinkler tongs, six sprinkler heads and wrench, 12 key guard glasses, three ¾-inch pipe caps, three ¾-inch pipe plugs, one all-service mask, one inhalator with extra bottle of oxygen, one smoke ejector, one demand mask with extra air bottle, one handie-talkie radiophone and four redwood pipe plugs.

A number of chiefs carry special equipment of their own. One assistant chief, for example, carries a voltage test meter, a copper tubing crimper, etc.

Chief Charles Bridges, who heads the King County, Wash., Fire District No. 37, has the following equipment in his command car: Resuscitator, high-tension wire cutters, first-aid kit, one liquid and one dry chemical extinguisher, extra bunker coats and boots, portable radio, 60-watt mobile radio, two all-service masks, one wool blanket and transistor loudspeaker on car. The car is also available as an ambulance.

Chicago scraps sedans

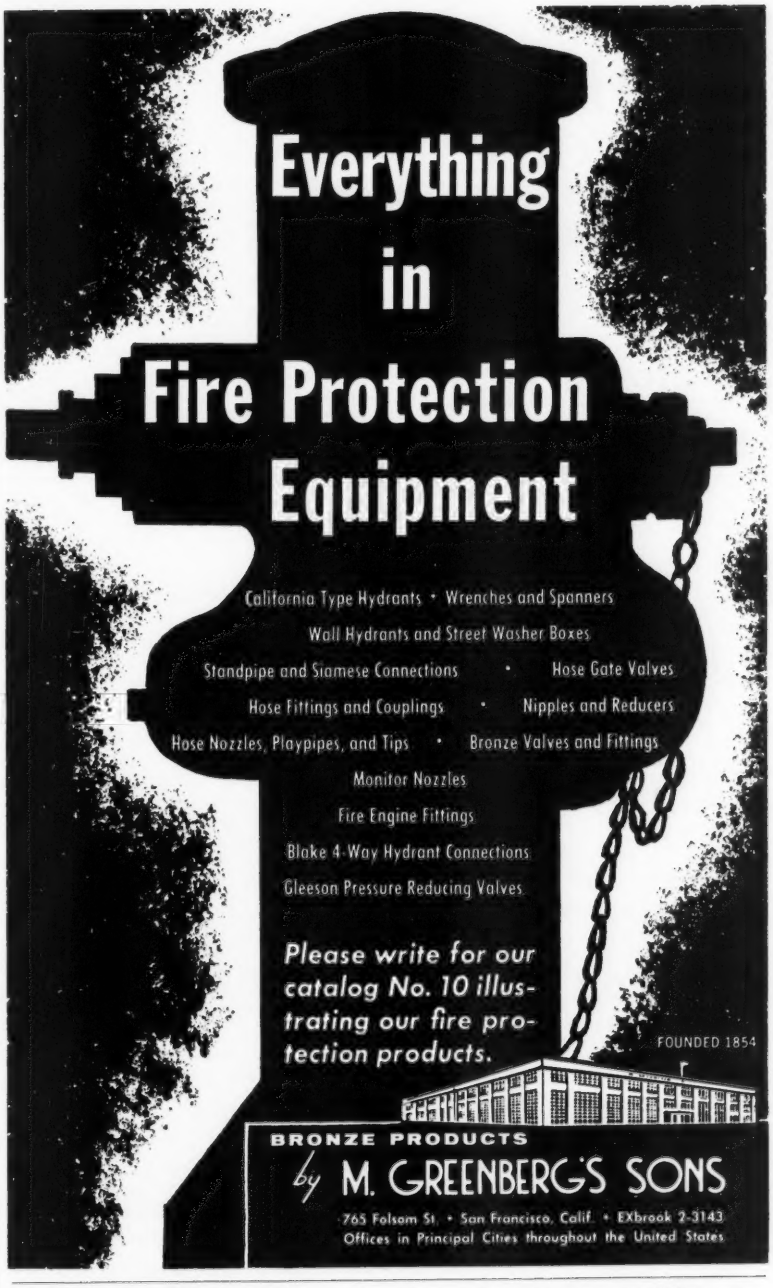
It is significant that as part of its modernization program, the Chicago Fire Department has taken the first steps to substitute station wagons for the conventional automobile sedan.

By May 1959, the department had added to its fire fighting and emergency forces 20 new station wagons, replacing as many two-door sedans formerly used by battalion fire chiefs. Of the city's 30 battalions, two-thirds have now been equipped with the new units and it is reported the balance will be replaced before the end of 1959. In its report for the year 1957, the department indicated it would ultimately be equipped with station wagons. It is recorded that during that year, the emergency ambulance service of the department responded to 28,884 calls, an increase of 3,482 over the previous year. Of the total, 8,453 were for vehicular and miscellaneous accidents, 597 were for airport alerts and 356 for fire alarms. Analysis of these emergency calls indicated that station wagons, equipped with fundamental first-aid facilities, could effectively handle a very large percentage of these calls.

According to the data released to FIRE ENGINEERING, the cost differential between the two-door sedan and the station wagon is comparatively small, taking into consideration the flexibility and other features of the latter.

At present, the department's station wagons are being used in emergencies as ambulances, especially at fires when ordinarily a battalion chief would be obliged to call for an ambulance. Now the chiefs dispatch their own wagons with an injured person to a hospital near the fire, thereby saving valuable minutes.

Upon delivery to the department the standard station wagons are sent to the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Fire Protection
Equipment
California Type Hydrants • Wrenches and Spanners
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Standpipe and Siamese Connections • Hose Gate Valves
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Please write for our catalog No. 10 illustrating our fire protection products.
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and save money, too!

speak as you normally would—be clearly heard and understood up to ½-mile away!

Unique transistorized power megaphone—an instrument you will be proud to own. Gives up to 6,000 two-second amplified messages from standard replaceable battery. Light (3¼ lbs.)—easy to handle and use. Attractive red and gray polyethylene—built for abuse. Attractively priced for you, too!

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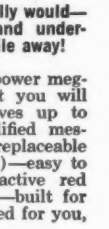

No one can place a price on the possible loss of lives due to fire.

But Falcon Automatic Fire Detectors & Systems can give early warning of fire to protect lives and guard property.

Falcon Automatic Fire Detectors & Systems are:

- U/L APPROVED
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... and they are low in cost!

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Kindly furnish complete data about your "Sounds for Safety" products.

We are especially interested in your:

☐ Fire Detectors & Systems ☐ Power Megaphone

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Name .....

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shop where they undergo certain alterations. In addition to stretchers and first-aid equipment, the vehicles are equipped with a portable generator which supplies illumination at ordinary still-alarm fires where the department light wagons do not respond; a hand pump which has broad applications; extra axes, pike poles and special nozzles and fittings. All new wagons are equipped with two white emergency lights, manufactured especially for the fire service.

The New York Fire Department recently announced that it has requested 28 station wagons to replace passenger cars presently used by certain division and battalion chiefs. Eventually it is contemplated that all these officers will be furnished with wagons. These units will be equipped with 1½-inch hose, fire extinguisher, masks, tools, resuscitators and first-aid kits. In addition, Commissioner Edward F. Cavanagh, Jr. is presently awaiting delivery of a station wagon to replace his limousine. □□

Missouri Valley Elects

The Missouri Valley Association of Fire Chiefs, a division of the International Association of Fire Chiefs, held its annual conference at Hutchinson, Kans., June 9-11.

Officers elected for the ensuing year are: Chief Fred Saefke, Fargo, N. D., president; Chief Eugene W. Fields, Omaha, Neb., first vice president and director, IAFC; Chief Wayne E. Ulm, Des Moines, Iowa, second vice president; Chief Paul Soener, Independence, Iowa, secretary-treasurer. State vice presidents are Chief C. W. Stone, Limon, Colo.; Chief A. B. Arnold, Mason City, Iowa; Chief R. A. Davis, Sedgwick County, Kans.; Chief C. Babcock, Kirksville, Mo.; Chief A. F. Putschler, ret., Dickinson, N. D.; Chief C. E. Zumwalt, ret., Pierre, S. D.; Chief A. L. Piper, Casper, Wyo.

Chief Ray Tiller, Waterloo, Iowa, who is a past IAFC president and director since 1940, relinquished his official duties. He has served as secretary-treasurer of the Missouri Valley for the past 32 years.

INDUSTRIAL FIRE PROTECTION

Continued from page 680

considered to prevent the development of an explosion.

Explosions may be prevented by (1) proper plant design, (2) an effective preventive maintenance program, (3) well-planned operations in the flow-sheet stage and (4) competent and well-trained personnel. Management can obtain technical help in this area through the U. S. Bureau of Mines, the American Society of Mechanical Engineers, the Manufacturing Chemists' Association and cooperation with their own fire insurance engineers.

Cooperation with outside agencies

When an inspection by a competent fire protection engineer indicates the need for changes in operational procedure or

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A complete line of oxygen therapy equipment—over 20 models—to meet any requirement! Oxy-Quip!

from this—

The most practical resuscitator tube for mouth-to-mouth technique. Non-trumatic, flexible, may be boiled and removable insert prevents patient from collapsing airway. Reversible—one unit provides for 90% of all cases.

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Quick, safe, portable and easy to use. Regulator stabilizes emission. Tanks easily changed without tools. Adapters provide for connection to medical and commercial tanks. Ideal for prowl cars, first aid stations, etc.

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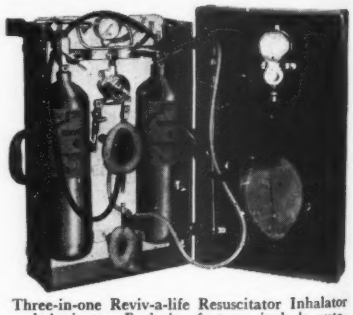

Three-in-one Reviv-a-life Resuscitator Inhalator and Aspirator. Exclusive features include automatic change-over from resuscitation to inhalation and back. It's light, simple to operate and unconditionally guaranteed for service.

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Accessories and repairs for all brands of oxygen equipment. World-wide distribution through qualified dealers.

SEE US IN BOOTH 92

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OXYGEN EQUIPMENT & SERVICE CO.

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structural design, management should take action. Complete surveys by the engineering department of the Factory Insurance Association, Factory Mutual Engineering Division of the Associated Mutual Companies, National Board of Fire Underwriters, or competent consultants in this field are a basic foundation upon which to build a fire-safe plant. Such groups are experts in their field and can offer assistance found nowhere else in the engineering profession.

Liaison with fire department

Plant managers should make every effort to maintain friendly relations with the fire fighting forces of their municipality. Through courtesy visits to the local fire station and by invitation to the fire marshal or chief to "come see what we make," a common ground for discussion of fire problems can be made.

It is of vital importance that fire department personnel have previous opportunity to become acquainted with the plant. Members of the first-due engine companies must be familiar with the general layout of the plant for ingress purposes, and points of high hazard.

In plants where hazardous materials are handled or processed, a key member of the staff should be assigned to work with fire department inspection teams in order that a multiple-hazard condition may be avoided.

In connection with this cooperative project, the man assigned should be present at pre-fire planning drills in order that the members of the fire companies responding can avail themselves of local operational "do's and don'ts." In addition, the plant liaison officer will know the type of approach tactics the fire department will make in certain areas of his plant.

Evacuation

One of the basic functions of any well-planned fire protection program is the safety of personnel. Fire is still the initial cause of panic which has taken many lives. No hazard, including explosion, should be overlooked in the preparation of an evacuation or emergency exit plan.

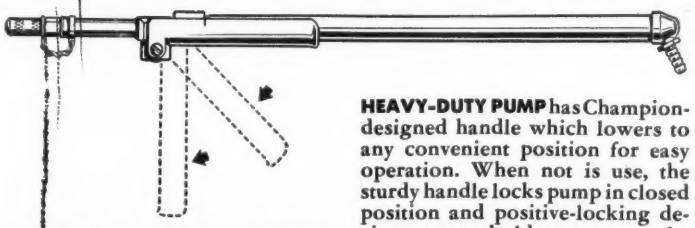
The number of exits, their capacity according to code, location, alternate means of egress and a thorough knowledge of the plant operations including exceptional hazards are phases of planning which will require considerable thought. Enclosed stairways are preferable to outdoor escapes and ladders, as weather conditions may make fire escapes extremely hazardous to use.

Group leaders should be chosen to act as guides in case of evacuation. Instructions to these leaders should cover in detail precisely what alarms will be given and the egress stairway and alternates to be used. Drills should be varied so that all means of escape are used at one time or another. Thorough planning and proper supervision are absolute necessities in emergency egress evolutions.

Fire brigades

Employees in plants or other areas where three or more persons are on the

CHAMPION slide pump makes "a little spray go a long way" on a fire-fighting job



HEAVY-DUTY PUMP has Champion-designed handle which lowers to any convenient position for easy operation. When not is use, the sturdy handle locks pump in closed position and positive-locking device on cover holds pump securely. Pump is brass throughout with non-corroding, self-cleaning bronze ball valves.

ADVANCED-DESIGNED TANK is also built for dependable performance. Important feature is attachment of hose at top of tank to prevent water leaking when pump is below bottom of tank. Large filler opening has leak-proof cover with non-freeze gasket; locks securely, no threads to wear. Tank holds up to 5 gallons.

VENTILATED BACK is form-fitting and, providing air circulation between tank and operator's back, guards against discomfort. Wide, adjustable straps make it easy to carry as knapsack.

Piston-type pump also available. Write for literature on both models. Distributor inquiries invited.

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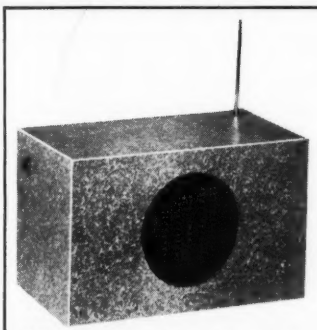

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The Modern Dependable Alarm System for
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NOW a limited number of A & W Pumper Mounted Computors are available for

FREE TRIAL and INSPECTION

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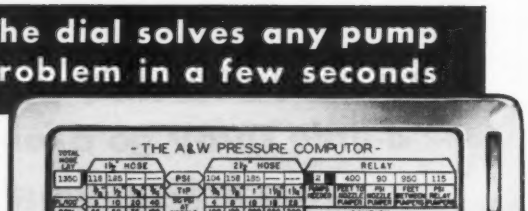

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- **PUTS EFFECTIVE STREAMS ON FIRE FASTER**
- **PAYS FOR ITSELF BY CUTTING PUMP, GAUGE and HOSE DAMAGE**

If you know your hose lay and tip size, the pumper-mounted A&W Computor gives you exact pump pressure in seconds, without loss of time or water. Computes for hand lines, master stream appliances, relays. Reduces personnel injuries due to ruptured hose.

Mounts quickly and easily on any pumper

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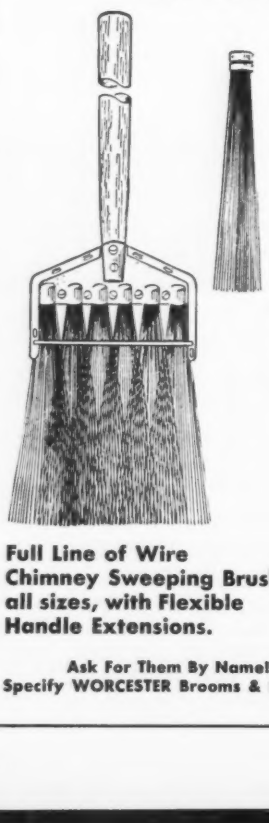

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Ideal for fighting forest fires and blazes in brush or grass. Can be used to beat out flames and sweep up brush and debris in salvage and clean-up operations. Extra long fillers, easily replaceable, are not affected by severe heat and will give long service. Accepted by the U. S. Army as the standard in their field, according to U. S. Government Specification MIL-B-20657A.

Full Line of Wire Chimney Sweeping Brushes, all sizes, with Flexible Handle Extensions.

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premises should be trained in fire fighting. Normally, when one speaks of a fire brigade, 10 to 15 or more men are visualized. Such a crew may be satisfactory where 35 to 50 employees are on a shift, but what about the small plant where only two or three men are operating automatic equipment? The answer is, train all employees in the fundamentals of panic prevention, evacuation, chemistry of fire, and fire fighting with first-aid fire appliances such as extinguishers and standpipe and hose lines.

For the small plant of five to 15 employees on a shift, a limited fire brigade unit of three to five men should be established and additional units provided as required. Training of these men would consist of an intensive course in the suppression of fires utilizing the various pieces of equipment found on the premises. A suggested curriculum would be:

Ropes, knots and hitches

Hose
1. Care of hose
2. Care of couplings and gaskets
3. Care of nozzles and play pipes
4. Hose evolutions

Ladders
1. Care of ladders
2. Hook or roof ladder
3. Wall ladder

Gas masks
1. Canister type
   a. Care and maintenance
   b. Uses
   c. Limitations
2. Self-contained masks
   a. Care and maintenance
   b. Uses
   c. Limitations

First aid and resuscitation
1. Definition and purpose
2. Dangers of limited knowledge
3. Treatment of cuts
4. Treatment of shocks
5. Use and care of inhalator
6. Rescue methods

Salvage
1. Reasons for practicing salvage
2. Care of covers
3. Knowledge of sprinklers

Miscellaneous subjects
1. Tactics
2. Ventilation and attack
3. Hydraulics, pumps, care and operation
4. Inspections
5. Chemistry of fire
6. Automatic sprinklers
7. Exposures
8. Fire prevention
9. Safeguarding hazards

Municipal drillmasters and state fire marshals often include industrial brigade training with their routine classes. Employees trained in the techniques used by municipal firemen places another team on the side of the fire fighting forces.

In organization, there should be fire companies headed by chiefs, captains and

lieutenants as in the municipal service. In an advisory capacity, certain key personnel should be an integral part of the plant fire brigade, particularly where hazardous chemicals or processes may be encountered. A typical organizational chart for a chemical plant is shown.

In order to have a fire-safe plant, it is necessary to develop a 24-hour program of prevention and protection all the way from the executive officers down to the janitor. In these days of uncertainty, it is well to plan for eventualities beyond normal anticipation and cooperation with local officers of civil defense should be sought. Definite plans may then be developed for either man-made or natural disasters. Planning should include mutual aid and assistance to neighboring industrial plants, should the occasion arise. When disaster occurs, panic may follow but preplanning and adequately trained personnel will reduce this hazard to a minimum.

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ELECTRICAL SYSTEMS

Continued from page 687

3-phase A.C. power to a bridge-type rectifier. The common rectifier has been a selenium stack. This is fairly large in size and must be mounted externally where a strong flow of cooling air can reach it. Recently the silicon rectifier was introduced and the small units are now being used to replace selenium. Mounted directly in the alternator case, they eliminate much external wiring and the sometime tricky mounting problem of the older style rectifier.

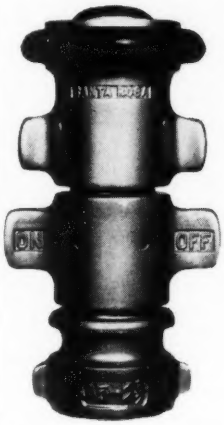
It was mentioned that the alternator is a 3-phase electrical unit. When operated for ignition purposes with the components supplied, this poses no problem. However, some fire departments have taken advantage of the fairly high power supplied, and by means of transformers, have adapted the systems to provide extra lighting as a supplement to the portable generator. This eventually led to the use of power tools and immediately some master mechanics were running into electrical problems.

All manufacturers of alternators will supply diagrams of the recommended methods of taking power from the alter-

for dependability
safety and efficiency
choose

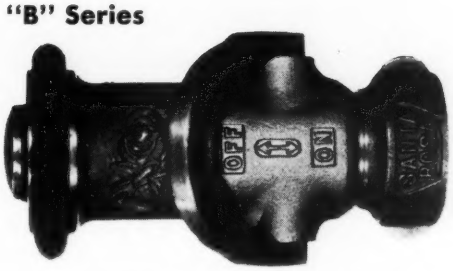
SANTA ROSA FIRE NOZZLES

"A" Series



Easy control by one man of volume and pattern from straight stream to flat curtain. Made in 8 different sizes threaded as specified. All sizes except 2½" made in fine polished brass or chrome plated. 2½" made in light weight alloy.

"B" Series



Same fine control and patterns as "A" Series. The shut-off handle swivels to any position and can be controlled by finger tips. Sizes from 1" thru 2½" in materials as listed for "A" Series.

Speedgun

Here's the trigger-Action booster line Speedgun with same fine pattern range as all Santa Rosa nozzles. Light weight, easy to clean of debris, low pressure and controlled volume.

Write us for catalog and prices

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P. O. Box 94, Santa Rosa, California

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Acclaimed by Fire Departments Everywhere As The Answer to Adequate Water Supply!

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RUSSELL FIRE EQUIPMENT

DIVISION OF
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FOUNDED 1905

nator. When connecting transformers, remembers the 3-phase rating. Most troubles in this respect have been due to neglect of this factor and resulting incorrect wiring.

Nearly all manufacturers recommend that the A.C. output be rectified to D.C., and that either D.C. or A.C.-D.C. universal tools be used. In this manner, the cycle problem due to the varying speed of the driving engine is of no consequence. With most alternators presently manufactured, the cycle varies as approximately one-tenth of the engine speed. Maintaining 600 rpm in a pumper merely to keep a 60-cycle tool operating sounds ridiculous and may be—especially if the pumper is supplying lines on a fire at the time—and even more so since both D.C. and universal motors are readily available for all tools. For units without pumps this may be no problem.

There is one large alternator on the market designed specifically for the purpose of supplying heavy-duty tools and floodlights. This somewhat specialized unit supplies 115/230 volts, single-phase, 60-cycle A.C. at 1,800 rpms. It has a special meter built into the throttle control panel to indicate when the speed is proper for 60-cycle. The manufacturer warns that operating A.C. induction motors from this unit requires careful planning, due to the great starting load. The induction motor may require from three to six times as much current for starting as for running. This may be determined from the code letters on the motor.* Again, the universal motor does not require this additional current. Due to the limitations on the alternator, some departments prefer to use them with transformers strictly for lighting purposes, and operate tools by means of portable generators.

Trend to transistors

It is probable the fire service will soon be seeing the transistor introduced into the ignition system. The trend to higher engine compression and higher rotational speed imposes demands on ignition, which are difficult to meet with present methods.

The transistorized ignition system replaces the points in controlling the input current. It switches it on and off with no moving parts. The point contacts are used only to turn the transistor on and off. Therefore, the current passing through the points is of a low value.

This improvement is said to eliminate "blue" points or oxidation and resulting hard starting; point erosion will no longer be a problem along with the sometimes resulting timing changes; and it is said to increase ignition power at high speeds, producing nearly constant output across the full range.

The transistor is sensitive to high temperature and must be properly cooled. Units presently available for pleasure cars mount the transistor in the coil assembly with special cooling fins or a "heat sink" provided as an integral part of the form.

*Rp, Rl and U—three times; CP and KL—four times; KS—six times.

—*Courtesy, Electric Controls, Inc.*

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ANOTHER *Wheeler* EXCLUSIVE!

Here is the result of over 40 years' experience in rescue suit development. The Fire King is proven in actual use and has been accepted by industrial and civic fire fighting units. The exclusive Wheeler design means superior protection for you. Fire King can be put on faster, permits more body freedom, and resists fire better. It's undoubtedly the best fire suit you can buy.
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*Design Patented—Trade Mark Registered

Fast, portable case. Wall hung if desired. Fire King shown with air respirator

WHEELER PROTECTIVE APPAREL, INC.
242 W. Huron Street • Chicago 10, Illinois

The transistor has been further adapted to the voltage regulator, which is said to increase its durability and dependability. One style of this new device eliminates all mechanical contacts and promises a trouble-free regulator good for the life of the apparatus.

There is an old saying that "nothing is new under the sun." This is very difficult to contradict in the automotive field. For example, automatic transmissions and torque converters are presently making strong inroads into the fire service. Yet, it is recorded that American La-France was one of the first manufacturers in this country to produce a genuine automatic transmission, the "Manly." This was fitted on a hose wagon in 1916 or '17. It wasn't practical at the time, but it did work.

The old adage is somewhat disproved, however, when we look at our modern ignition systems. As we progress further into electronics, we will certainly use techniques which have never before been employed. Some of those mentioned here were unheard of a few years ago. □□

New York Revamps Responses With Saving to Taxpayers

Fire Commissioner Edward F. Cavanagh, Jr., recently announced that the New York Fire Department expected to save the taxpayers $778,500 in salaries during the current year by the elimination of four engine companies, the second section of a ladder company and the 25th (Marine) Battalion. The 24 officers and 143 firemen in these units have been transferred to other units.

Commissioner Cavanagh credited these savings to the department's "increased fire prevention inspectional and educational program, together with improvements in the department's communications system." He assured Mayor Robert F. Wagner that this saving will not impair service but, on the contrary, will improve fire operations through greater efficiency.

In addition, whenever more than three land engine companies are due to respond to a box south of 59th Street, Manhattan, the fourth-due company shall not respond on the box. It shall respond, however, if a 7-5 signal (All Hands Working) or a greater alarm is transmitted for the box.

To provide increased fire protection for midtown Manhattan, a new Squad Co. 5 has been established in quarters on East 14th Street. Using a converted hose wagon equipped with fire fighting equipment, the new squad responds to all first alarms from Canal to 42nd Streets.

Commissioner Cavanagh also revealed that the department plans to replace passenger cars used by division and battalion chiefs with station wagons. As a starter, 28 have been requested. Each of the station wagons will be an auxiliary fire fighting apparatus for it will carry 1½-inch hose, fire extinguishers, masks, fire fighting tools, resuscitators and first-aid kits. In case of need, it may be used as an ambulance.

A new high-pressure coupling by BAR-WAY for all types of fabric hose

Patented

1. FULL FLOW—no significant reduction of internal diameter. Pressure is assured.
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6. WEIGHT—no heavier than comparable expansion type coupling.

Available in polished bronze in both standard rocker and forestry lug. 1½" in production. Larger sizes will be available.

Successfully Tested To Bursting Point Of Double Jacket, Single Jacket And Sweat Hose

Recognizing the trend toward higher and higher pressures in fire fighting, Bar-Way has developed a revolutionary coupling that will withstand the pressure and the pull. This new coupling is designed to fire fighting specifications. It guarantees full flow, full pressure, it is streamlined to slip over obstructions, and it can be interchanged anywhere at any time without damage to either the tube or fabric. Specify Bar-Way! Write Bar-Way Mfg. Co., Stamford, Conn.

BAR-WAY MFG. CO., STAMFORD, CONN.

FIRE FIGHTER TRUCK CO.

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500 g.p.m. three stage Champion fire pump—100 g.p.m. power take-off pump—two heated enclosed reels with 300 feet booster hose—600 gallons booster tank—eight equipment compartments—International V196 chassis with 206 H.P. V8 engine.

WATER FOR FOG FIRE FIGHTING

Continued from page 672

non which occurs with the clockwise rotation of the nozzle into highly heated areas. At this writing no satisfactory answer or explanation has been provided. However, there are strong indications that it involves natural forces which are at work on the molecule. It is known and proven by experiments that the previously mentioned results are accomplished by the clockwise rotation of the nozzle. This rotation should be made following the contour of the area, striking as much of the perimeter as possible with the outer surface of the fog stream. This rotation should be as violent as it is possible for the nozzleman to make it.

The information on nozzle manipulation, like rate of water flow is not new. Chief Officer F. Folke, Fredericksburg, Denmark, in his paper "Experiments in Fire Extinguishment"* stated:

"Experiments as early as 1930, also, uncovered the importance of nozzle manipulation. Stanzig concluded a high nozzle pressure was still considered important—9 to 12 atmospheres (130 to 175 pounds). This was to obtain good distribution of the water from the ricochet effects. Good distribution was aimed at by very energetic movement of the nozzle pipes. Stanzig said, 'The nozzle pipe movement must be just as violent as bayonet fighting.'

"Following this principle, in Vienna it was customary to run out a few light hose lines quickly and after a few minutes the fire would be knocked down in most cases. As a result of this research on water flow and application, building codes and fire fighting equipment in Vienna were redesigned to conform to the findings of these experiments:

"1. Laws enforced to subdivide buildings, particularly those of dangerous occupancy, into fire areas or compartments not exceeding 500 square meters (about 5,000 square feet)

"2. In order to assure speedy turnout many small stations were scattered all over the city. The engines were small and light. The cars had a water tank of 560 liters (150 U. S. gallons), could pump 250 to 350 liters per minute (60 to 90 U. S. gallons per minute) at 25 to 20 atmospheres (375 to 300 psi) through 400 meters (1,300 feet) of 2-inch standard hose

"3. Each squad was equipped to master fires of 250 square meters (2,700 square feet). To buildings where fire areas were greater additional squads would be sent."

The proper distribution of water fog on the initial application is very important and the nozzleman must understand what he is trying to accomplish. The fog pattern is adjusted so it will just reach across the area involved. The nozzle is placed inside the area and rotated—following the contour of the area—striking as much of the perimeter of the area as possible with the outer surface of the fog stream. Across the ceiling, down the side, across the floor, up the side, across the ceiling, etc. This rotation is as violent as it is possible for the nozzleman to make it. In placing the nozzle inside the area, it should be inside the window or other opening about an arm's length. In order to do this the nozzleman must have gloves, helmet and protective coat.

The purpose of rotating the nozzle is to obtain steam production over as much of the area as quickly as possible. When the water strikes any of the heated material in the room momentarily, it creates a steam blanket. If nozzle rotation is rapid enough, this steam blanket will hold until the nozzle has a chance to get around to that spot again. If the rotation is too slow, this steam blanket will not hold and the fire which has been knocked down will build up before the nozzle passes its way again.

In addition to the amount of water flow and manipulation of the nozzle, air flow into a given fire area is an important consideration. The amount of heat that is released by burning different types of fuels varies. This characteristic of fuel is referred to as its calorific value. In the fire service the fuels can be divided into two general classes with average calorific values: Class A fuels—ordinary combustibles—fuels that burn and leave glowing

*NFPA Quarterly, Oct., 1937, Vol. 31, No. 2.

WAECO

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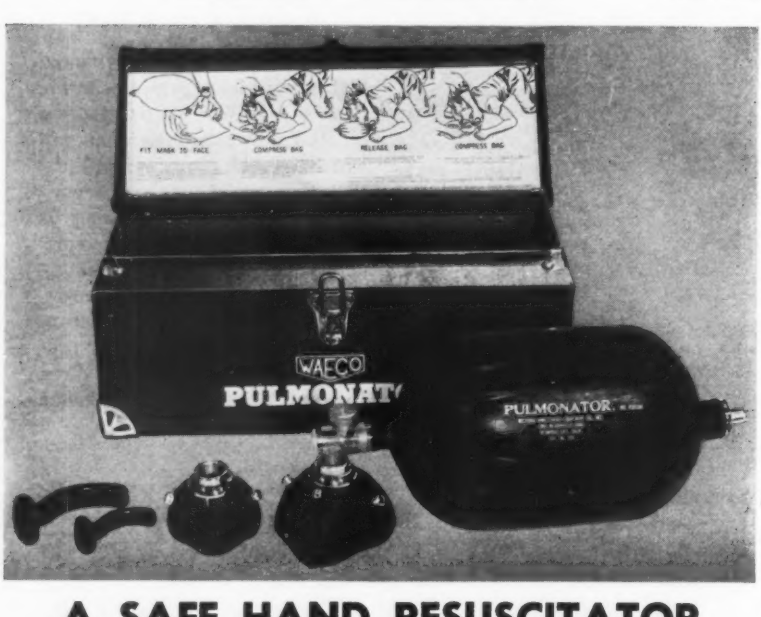

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A gentle manual squeeze of the Pulmonator bag will expand the victim's lungs. Release of the hand permits exhalation to take place and, at the same time, the elastic recoil of the bag causes it to refill with fresh air. An oxygen nipple provides easy attachment to an oxygen tank for the occasional patient who benefits from an oxygen enriched atmosphere.

PACKAGED FOR FIRE AND RESCUE SERVICE IN A DURABLE, METAL BOUND FIBER CASE, COMPLETE WITH AIRWAYS AND MASKS, ONE EACH, IN ADULT AND CHILD SIZES. No. 525-F PULMONATOR, as illustrated $75.00

For additional information write:

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2555 Middlefield Road
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coals. This group has an average calorific value of 8,000 Btu's per pound. Class B fuels burn primarily on or above the surface and leave no glowing coals. For this group we use an average calorific value of 16,000 Btu's per pound.

The above figures are not of too much value to the fireman in thinking of fire extinguishment. They provide a means of figuring the amount of heat there will be if the contents of a building are entirely burned, and are of interest to men who design buildings to withstand fire.

The fireman is more interested in the amount of heat that is being produced when he makes his attack and the fact that the oxygen supply to a fire does more to set limits on heat production than the amount of fuel available.

It has been determined that with most common fuels the union of 1 cubic foot of oxygen with a fuel will produce 535 Btu's of heat. If we break this fact down to a rule-of-thumb figure that can be used by firemen, we have the following: Approximately 7 per cent of normal air is oxygen that can be used by a fire. Normal air contains 21 per cent oxygen and when this is lowered to 14 per cent, burning is arrested. Seven per cent of 535 is 37 Btu's, which is the amount of heat that can be produced by consuming the available oxygen. One gallon of water can absorb 9,330 Btu's of heat. If we divide 9,330 by 37, we find that 1 gallon of water should absorb all the heat that 252 cubic feet of ordinary air will produce. As a rule-of-thumb it can then be said that 1 gallon of water will absorb all the heat that 200 cubic feet of air can produce.

The above would be true if no air were allowed to enter or leave a given fire area. However, it must be remembered that as air flows into a fire area, heated gases and products of combustion must escape from that fire area. This coupled with the heat loss by conduction through the walls will mean that the total amount of heat in the area will remain fairly constant and very close to an estimate that can be arrived at by using the above figures. This will remain true on a varying scale up to the time that large amounts of red hot carbonaceous material accumulate in the fire area.

When a fire is partially ventilated it is difficult to judge the degree of ventilation. A rule-of-thumb formula needs to be developed for estimating the degree of ventilation on any given fire. This would be especially helpful in making comparisons of fire tests and experiments. It should be noted that the United Kingdom through its Fire Research Station is currently conducting experiments and tests in this area. □□

Sirens May Assist High Speed Rockets

The National Aeronautics and Space Administration is studying the possibility of using sirens to speed up solid fuel rockets. The siren's sound waves would speed up mixing of the burning gases thereby increasing the combustion rate and the rocket speed.

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Protect Your Hose!
use Consolidated . . . .
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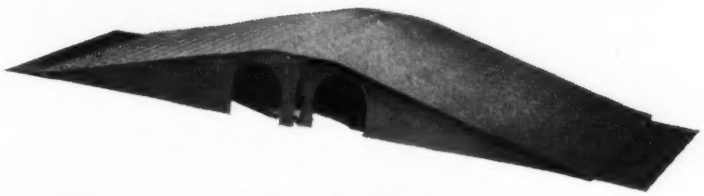

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Here is the finest HOSE BRIDGE ever offered the fire field. Lasts a lifetime! Get your dealer to show it to you.

- 100% steel-welded and reinforced
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- Safety plate surface
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- Easy to handle—weigh 35 lbs.
- Compact—16" x 20" closed
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Write direct for further information or order a pair on approval.

$85.00 per pair

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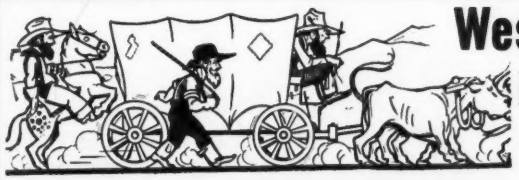

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THE WATCH DESK

overhauling the firemanic news of the day

Philadelphia Firemen Star on TV

Television viewers were thrilled by a dramatic news picture in which Philadelphia fire fighters played stellar roles late in April. A 70-year-old widow protested the parking of funeral cars in front of her house. She raised such a ruckus that police were called. The woman then locked herself in her home and armed with a shotgun, threatened to shoot anyone who tried to remove her. After she turned a deaf ear to please of the clergy, the police and her son, plans for a tear-gas attack were made.

Firemen were called and gas masks issued. Gas cartridges were fired into the third floor and the unfortunate woman hurled most of them back into the street.

Policemen guarding the interior were forced out even though they were protected with masks. One collapsed and he with two companions were rushed to the hospital. Fire fighters donned demand-type equipment and stood fast.

At 6:15 p.m., the woman came running to a front window and collapsed over the sill, her arms outstretched. Firemen quickly laddered the building and Lieutenant Victor Mitura and members of Engine 26 went after the victim by way of the ladder and the interior stairs. . . Firemen and policemen seized her and the gun, and attempted to pull her back into the room. But in spite of the foul air she had inhaled, the crazed woman fought all hands. It was then decided to lower her by rope down the ladder.

Firemen tied a life rope around her, passed her through the window to the lieutenant and his helpers, and she was brought to bay after three hours of turmoil. Treated at the scene with oxygen, and later at the hospital for gas inhalation, the woman was put in a psychiatric ward and charged with a long list of crimes.

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Exceptional Performance!
Handsomest Appearance!
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All at Moderate Prices.

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Island Park, L. I., N. Y.

Hot Off the Tape

Governor Brown of California has signed a bill which makes possible the prosecution of a person for misrepresenting himself as a fire department official while selling fire fighting equipment. . . . In Stillwater, Okla., police found three cylinder containers and took them to an oil well servicing company to see if they were explosive. They were. The windows of the company were blown out during the test. . . . A homemade rocket roared out of a field in northeast Des Moines and cut partly through the top of an unoccupied station wagon parked in a heavily populated area quarter of a mile away. The 30-inch rocket had a wooden nose fashioned from a broomstick and an aluminum tube. A big bunch of boys were seen going into the field before the blast; police couldn't find them afterwards. . . . A Los Angeles woman was reported injured seriously in San Diego when her car slammed into the side of Engine 4's pumper responding on an alarm which later proved to be false. None of the four fire fighters was injured. . . . When a derailed propane gas tank car sprung a leak June 5 at Iowa Falls, Iowa, the entire east half of the city, including the municipal hospital was evacuated in fear of an explosion. . . . The San Francisco Fire Department estimates that 17 false alarms of fire in a three-hour period to which some 500 men and scores of units of apparatus were dispatched cost the city a total of $8,500. . . . Because her mother wouldn't let her go on a picnic, a 15-year-old girl touched off a vandalism spree at a Denver high school. Aided by two 17-year-old boys she did $8,000 damage, including starting a $5,000 fire. . . . A suitcase full of dynamite—capped and fused by an expert, according to authorities—was placed on the Rock Island Railroad tracks in Des Moines, June 5, shortly before a Rocket passenger train carrying 200 persons was due over the spot. But the charge failed to explode, apparently because the train cut the fuse. . . . The entire complement of Engine Co. 22 of the San Diego Fire

Department, including Lieutenant Harvey Harmelink were poisoned by food eaten at the station and hospitalized. Seems they ate Chinese food leftovers from a picnic of the previous day, which were brought in by one of the victims. Deputy Fire Chief Al Penrose said all men would recover. . . . New York City has statutes which prohibit sale and use of fireworks. But a Brooklyn woodshed loaded with the explosives blew up the night of May 31, damaging some 14 surrounding homes. Police say shed contained a $1,000 cache of illegal fireworks intended for July 4 bootleg trade. . . . A miniature cannon made by two Chico, Calif., high school boys, exploded while they were loading it in the kitchen of Carl Geear, Jr., one of them. Geear's hand was shattered; the other boy was peppered by flying pellets and bits of metal.

Fire Chief Buys Jail for $5

It takes Fire Chief Charles I. Clark to put anyone in jail in the Village of Woodstock, Champaign County, Ohio.

The chief bought the Champaign County hoosegow for $5. Not just for the fun of locking up false alarmers (a rare species in this village), but rather to get rid of it! Seems the jail is in a corner of the village fire station, where it's in the way of firemen and fire apparatus. Chief Clark, who has been a local fireman for 40 years and head of the department for a dozen years, says he doesn't know just what to do with his private jail. "I may board it up and use it to store coal in," he said.

Norris T. Morton

Enough Is Enough

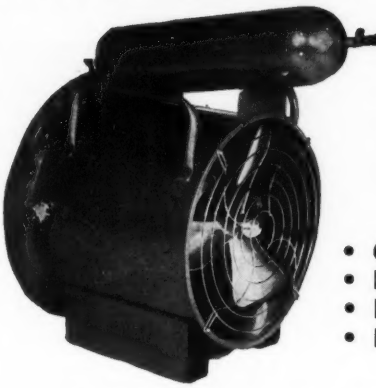
San Angelo, Tex., City Commissioner G. T. Trusler acquired a very active jinx last spring which burned him out of two homes and got a good start on the third in a space of 10 days.

Arson investigators didn't believe that one man could be that unlucky, and searched for a "jinx" that had a grudge against the commissioner.

On March 9 the Trusler family first discovered a fire in a bedroom of their new home. Firemen did a fine job and kept the damage minor, as they did later the same afternoon, when a blaze was discovered in another bedroom while the Truslers were out visiting.

Three days later the family was not as fortunate. A fire broke out in the living room, seriously damaging the house and destroying the furniture. Trusler rented their old home, bought new furniture and moved the family back into it. While the decorators were redoing the new house on the 17th, fire broke out in the old house, destroyed the new furniture once again, and made the house uninhabitable. Trusler put his wife and family up with friends and took a room with his uncle. When he returned to the room on the 19th, a window curtain, window frame and empty baby bed were blazing away. Ten days, five fires. *Jim Noah*

THE EFFECTIVE WAY TO CLEAR SMOKE FROM BURNING BUILDINGS



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- Helps Locate Flames
- Reduces Damage
- Reduces Odor

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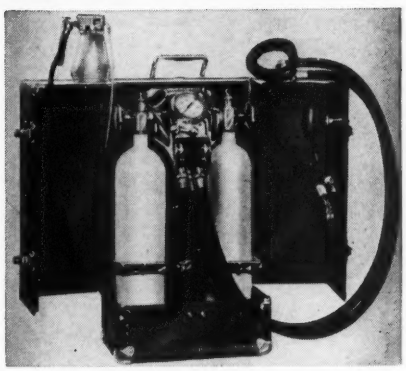
will protect your community — and you



This instrument will give maximum protection to the people of your community against smoke suffocation, electric shock, drowning and other respiratory emergencies. It is four instruments in one: RESUSCITATOR, INHALATOR, ASPIRATOR, ASSISTOR.

In resuscitation the mixture is adjustable from 100% oxygen to 50% oxygen, 50% nitrogen from the air. This feature prevents oxygen poisoning in prolonged cases and doubles the life-saving capacity of the two D size cylinders. A simple selector regulates pressure from Adult to Infant to Assistor (one-half Infant pressure) for bridging the gap between resuscitation and inhalation. This range is essential in chest injuries, where the patient makes the first efforts to breathe after being overcome, and in working with small children. An extra Midget attachment permits resuscitating two patients and aspirating a third simultaneously.

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THE CHEMICAL ENGINE ERA . . . *Continued from page 683*

the Holloway was a popular type of chemical equipment. In later years, American-LaFrance furnished the Holloway as well as the Babcock and Champion chemical tank assemblies.

When F. S. Seagrave began the manufacture of apparatus at Detroit in 1891, his products included a horse-drawn double-tank chemical engine of the design then popular in the service. Fire Extinguisher Mfg. Co., of Chicago, one of the principal builders of fire apparatus before the days of motorized equipment, were the successors to Babcock Company and up into the first decade of the 20th Century, were the largest producers of chemical units, building the stationary-tank Babcock and revolving-tank Champion types.

One of the early chemical engines was the product of the Hydro-Pneumatic Fire Extinguisher Company and utilized stored compressed air for expelling the liquid, which was a solution of bicarbonate and water. Users were advised to always charge the cylinders with the solution as it had "ten times the extinguishing effect of untreated water." This belief in the overwhelming superiority of the chemical engine over tanks of plain water long persisted in the minds of many experienced firemen.

Chemical apparatus came into use at a period when practically all fires to which fire departments responded were fought with streams from 2½-inch hose lines stretched from hand-operated or steam fire engines. There were very few communities with adequate water mains and the difficulty and time consumed in getting water on a blaze meant that buildings were often beyond saving before the first stream was in action. The advantages of the new chemical engines were sensational, and for several years the manufacturers could not build them fast enough to supply the demand.

But like most all new and revolutionary ideas, the chemicals were vastly overrated, so much so, that many fire departments had to fight against a widespread belief that all hand and steam fire engines could be replaced with chemical engines carrying 100 to 200 gallons of water, which, when mixed with the magic chemicals and projected through a 1-inch hose, could put out any fire ordinarily extinguished by a fire engine and a 2½-inch line.

At the beginning of the chemical engine era these units were often placed in the first-line category. After experience had given some indication of their limitations they were usually considered more as first-aid apparatus.

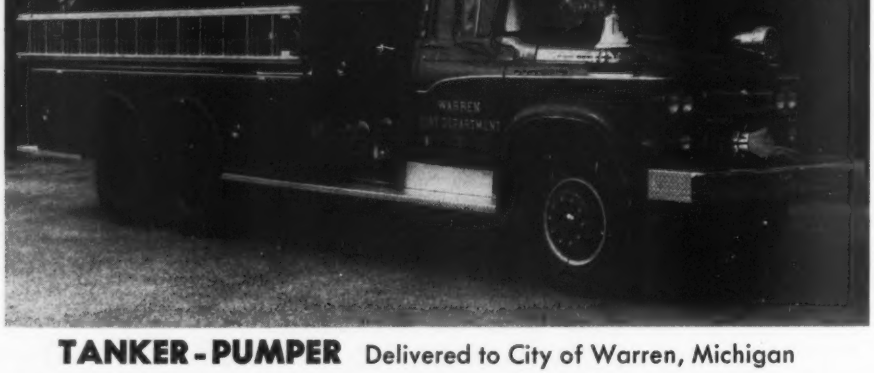
An example of the effective use of chemical engines as first-line equipment was their adoption by New York in 1874 as the principal protection of the newly annexed territory north of the Harlem River—now the Borough of the Bronx. On January 1, 1874, the New York Fire Department organized the 10th Battalion with eight companies to cover the 20 square miles and 10 scattered villages taken over from Westchester County. Because of the scarcity of water mains in the area, the Board of Fire Commissioners purchased four Babcock chemical engines for service north of the Harlem and the new 10th Battalion began operations with four chemical engines, two steam engines, and two ladder companies.

The chemical engines were of the double upright-tank type, with a third tank carrying a reserve supply of water. The 1-inch hose was on a reel under the driver's seat. The chemical engine companies also had a second piece of apparatus called a water tender. By alternate use and recharging of the chemical cylinders, and refilling the tender at a convenient water source by means of the hand pump which it carried, or by steamer or hydrant pressure, operations could be continued indefinitely.

First-aid auxiliaries

With the extension of the water mains these units were gradually replaced by steamers and hose tenders. The chemical engines became auxiliaries attached to other companies and the water tenders were dispensed with. This description of the use of the chemicals in the annexed Westchester territory of New York will

HERE IS THE PROOF



TANKER-PUMPER Delivered to City of Warren, Michigan

Dodge Chassis. 2000 Gallon Tank. 750 GPM Waterous Electro-Matic Pump, Compartments & all Pumper equipment

CHIEF *If you are looking for the Most Modern Top Quality—Skillfully engineered—Fire Apparatus—Contact,*

Fire Master Corporation

P. O. Box 783 Mt. Clemens, Michigan

give an idea of how the chemical engines provided some protection for countless communities not covered, or inadequately covered, by water mains.

In built-up sections of cities, however, the chemicals were utilized as first-aid apparatus, a function well suited to their limitations. In the metropolitan area, New York installed several one-horse two-wheeled engines with single tanks as auxiliaries to ladder companies. These were utilized principally on still-alarm responses to minor fires.

Some of the suburban engine companies organized in New York at various times, up to the 1900's, began service with the standard double-tank chemical engine, drawn by two or three horses, or with combination hose and chemical wagons, and later acquired their steamers and regulation hose tenders. These cases are related as typical of the reliance sometimes placed on chemical apparatus, even in the larger cities.

Chicago was an extensive user of chemical engines, having as many as 13 two-wheel and three four-wheel engines in service at one time, principally as auxiliary apparatus in ladder companies. San Francisco was an early user and at the time of the Great Fire had seven chemical engine companies in the department. The present tank wagons in San Francisco are successors to them.

New Orleans was another of the larger cities where chemical engines were a major part of the apparatus equipment. At the beginning of the motorization program there were 11 chemical engine companies, and among the first pieces of motor apparatus were the straight chemicals propelled by air-cooled engines, the "seat over engine" Seagraves of 1907.

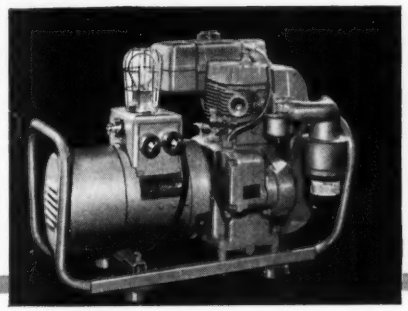
Advent of the "Combination"

Hose wagons began to replace hose reels about 1890. In the mid-nineties the Somerville, Mass., Fire Department put a chemical tank and hose reel on one of their hose wagons. They gave it a three-horse hitch, and originated a type of apparatus with which a large proportion of engine and hose companies were equipped during the last years of horse-drawn fire apparatus. It was the usual practice to furnish the combination wagons with either a 50 or 60-gallon tank, or two 35-gallon cylinders. About half of the horse-drawn ladder trucks were also provided with chemical tanks and hose.

The first automobile apparatus usually followed the body designs of the combination hose and chemical wagons, and generally the early motor pumping units continued to be furnished with chemical tanks and reels of small hose.

In 1913, Charles H. Fox, of Ahrens-Fox, conceived the idea of mounting a small-capacity front-end pump and water tank on a motor hose wagon, instead of the commonly used chemical tank, and gave the name of "booster" to the water tank and pump assembly. The original "booster" apparatus was placed in service in the Cincinnati Fire Department, and while the idea of putting a small stream of plain water on a fire through a "garden hose" was openly

When only POWER can help you...



in emergency
in remote places
anywhere
anytime
IT'S PORTABLE POWER

There comes a time when only 60 cycle, 115 volts can help you. That's when one of these portable generator packages, in five sizes, can give you 600 to 2500 watts of help. Two men can carry the biggest one. You can use it to operate standard motor driven equipment and tools in remote locations away from highlines, or you can use it to keep you going when normal electric supply is interrupted. Handy to have anytime... vital in emergency. Other mobile units available up to 10kw. Write for complete information: Fairbanks, Morse & Co., Chicago 5, Illinois.

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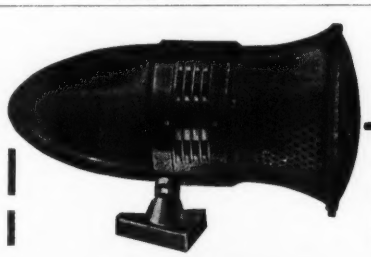
a name worth remembering when you want the BEST

HOME WATER SYSTEMS • PUMPS • SCALES • GENERATORS • ELECTRIC MOTORS • COMPRESSORS
DIESEL, DUAL FUEL AND GAS ENGINES • LOCOMOTIVES • MAGNETOS



MODEL 20 SIRENLITE
for Emergency Vehicles

Siren sounds a penetrating warning, red light automatically flashes authority. Traffic opens instantly, day or night. FREE ROLLING feature.

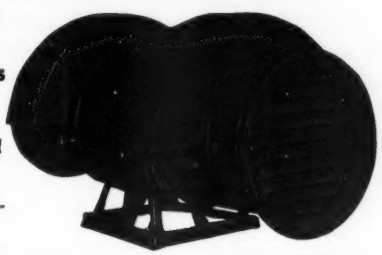
STERLING SIRENS

- **HANDSOME**
- **RUGGED**
- **RELIABLE**

Built by proud craftsmen to the highest standards of precision manufacturing . . . utilizing materials of finest quality . . . Sterling Sirens give year-after-year of unsurpassed dependability and satisfaction.

MODEL 20 SIRENLITE FIRE ALARM SIREN
for Volunteer Systems

Quick acceleration, power-plus . . . Model M really gets the boys out in a hurry! Used by championship companies from coast to coast. A dependable, heavy-duty siren built of the finest materials throughout.



Complete line of siren Equipment • *Bulletin on Request*

THE STERLING SIREN FIRE ALARM CO., INC.
10 BARTLETT ST., ROCHESTER 8, N. Y.

EMBARRASSING MOMENTS:

"I-I DIDN'T HEAR THE SIREN"

Don't risk missing alarms.
Don't depend upon a
jammed telephone line.
Be alerted the modern way.

Volunteers!!

Install the "FIRE REPORTER" in your home.

Transmits location and progress of fire.
(Especially designed for Fire Calls)

FIRE-REPORTER, 30-50 mc.
FIRE-PAL, 152-162 mc.
Specify EXACT frequency
TUNING RANGE, 1.3 mc.

- DRIFT-FREE
- Automatic squelch
- 7 tubes plus rectifier
- 110-120 volts, 30 watts
- Whip antenna

Money back guarantee

37.50 *post paid*

(7" x 10" x 5¼")

HARRON LABS

42-10 220th St.
Bayside 61, N. Y.

ATTENTION!

Fire Chiefs Everywhere...

Here is the NEW Stryker EMERGENCY SPLINT*

Simple to Apply • Effective • Comfortable

More and more fire and police departments are using the Stryker Emergency Splint because of the simplified method of application. The Stryker Emergency Splint combines shaped aluminum half sections with built in padding and traction to completely immobilize the limb. Moderate, uniform compression controls bleeding and swelling. X-rays can be taken without removing the splint, allowing the fracture to be set immediately. Lightweight.

Dept. FE-8

Stryker SURGICAL AND HOSPITAL EQUIPMENT

Orthopedic Frame Company

420 ALCOTT STREET • KALAMAZOO, MICHIGAN

*Patented

ridiculed by many fire officers who still thought that "chemicals" had extinguishing qualities not possessed by ordinary water, the "booster" grew rapidly in favor and soon displaced the chemical engines and chemical combination.

I well remember the 1913 convention of the International Association of Fire Engineers in New York, and inspecting the exhibits in Grand Central Palace. A chief of a large city fire department, who stood near me at the Ahrens-Fox "booster" display, was heard to say, "That thing will never replace the chemical engine." How wrong he was! □□

Acknowledgment: Appreciation is extended to Fireman Paul F. Stolz, FDNY, assistant librarian, Fire Department Library, for research and translations.

World-Wide Fire News

"Off Limits," Vancouver Refuses Fireboat Aid

The old question of just how far a municipal fire department should furnish fire protection cropped up May 2 in Vancouver, B. C. This time the controversy concerned protection at sea. The charge that "a Vancouver fireboat five miles away refused to give assistance when his ship was swept by an explosion and fire the night before, within sight of land" was made by the captain of the Norwegian freighter *Ferngulf*. Five crewmen were injured, two critically, as the fire, fed by 700 tons of fuel oil and lumber, raged aboard the 5,300-ton ship for nearly four hours.

Vancouver officials are quoted as saying that city fire equipment could not be used to aid the stricken freighter because it was outside the city limits. Vancouver Fire Chief Hugh Bird, who had no alternative but to abide by local regulations which forbid dispatching the city's powerful fireboat to aid the freighter said "the responsibility of the fireboat is to protect the city's harbor installations."

The fire was finally brought under control with the help of volunteers from the Canadian destroyer escorts *Saguenay* and *Assiniboine* and the U. S. submarine *Capitane* docked at Vancouver. They hurried to the scene in small craft within minutes after the SOS was received from the freighter. The ship's captain William Alcher, credited the volunteers in controlling the fire and keeping the ship from sinking. Local fishermen also helped in removing the injured.

Communications Fail in Mutual Aid

When fire struck the town of Lanark, Ont., June 15, the fast-spreading blaze destroyed the telephone building and appeals for help had to be sent through a phone several miles away. The fire, which destroyed almost half of the eastern Ontario town, left 150 persons homeless and caused property damage estimated at over $2 million.

High winds fanned the flames from the place of origin, a lumber yard, along both sides of the main street, burning more than 40 of the town's 90 buildings including most of the business section. Only four houses were left standing. When calls for aid were finally put through (it is reported there is no radio network in the area for disaster operation), fire fighters from Smith's Falls, Carleton Place, Perth, Almonte and Ottawa, 50 miles away, responded to help prevent complete destruction of the community.

Cable Ship Burns

When the 4,534-ton British cable-laying ship Ocean Layer burned 500 miles off Ireland on June 15, 98 men, 10 Americans among them, took to lifeboats. An hour later, the German freighter Flavia, 5,326 tons, picked up all 90 and placed some of its own crew aboard the abandoned cable ship. The blaze started in the Ocean Layer's engine room and quickly spread throughout the vessel. An SOS was immediately sent out and 15 minutes later, the captain radioed he was abandoning ship.

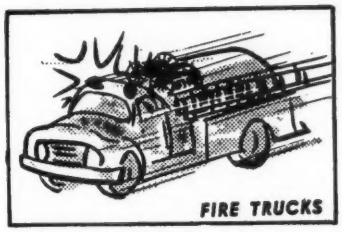
From the World News Ticker

When fire swept three wards of a 1,500-bed mental hospital in Basingstoke, England, June 15, doctors and nurses shepherded 150 women patients to safety. Firemen controlled the blaze after a two-hour struggle . . . Fire swept a crowded circus tent, June 14, at Sapporo, Japan, causing a panic in which 33 persons were injured. Seventeen animals were burned to death in their cages; the big tent and a theatre next door were destroyed . . . When a fireworks plant at Iida, Japan, blew up, seven persons were reported dead and 11 missing. More than 50, mostly school children, were injured . . . The main army barracks at Port au Prince, Haiti, the Caserne Dessaline, directly behind the National Palace, burned on June 21. Fire starting in a motion picture theatre in one wing spread rapidly throughout the barracks. Soldiers refused to allow anyone but firemen near the burning structure . . . Fire destroyed 40 homes in the new territories of Hong Kong Crown Colony bordering on Red China. A woman and a child were killed, seven injured . . . Three boys were found playing on a contaminated dump at a factory near Glasgow, Scotland, where radioactive materials were used for illuminating watch faces. They were hustled to a radiological protection center after tests proved their shoes and outer clothing showed some radioactivity . . . Flames shooting from a schoolhouse June 16 at Trivandrum, India, interrupted a "fiery" speech by Kerala state's Communist premier only 200 yards away. While firemen put out the blaze in the thatched roof of the school, 20,000 persons watched . . . It is reported many of the 300 persons who required medical attention after breathing escaping chlorine gas at Monterrey, Mexico, late in April are still being treated. No deaths resulted, but 20 were seriously affected. □□

Kay-Lab Flashers for Warning Lights

"KAY-LAB" FLASHERS are specified by many fire depts. Repeatedly the choice of City, County and State governments requiring flashing lights on emergency vehicles because only "Kay-Lab" has the features specified.

Also for passenger cars towing boat, mobile trailers.



FIRE TRUCKS

"STOP-IT" SAFETY FLASHER FOR "CHIEFS" CAR

Makes lights flash on-and-off. Used for flashing warning signals and directional signals. Continues to burn lamps with a steady light in event of failure. Available in 4 types. Will flash 1 to 4, 21 candlepower lights, singly or in unison, without matching flasher to load. 6 and 12 volts.

"UNIVERSAL" ALTERNATING FLASHER—FOR "HOOK-AND-LADDERS" AND MULTIPLE LIGHT VEHICLES

Heavy duty. Meets requirements of State Laws for alternating flashing signals. Up to 15 amperes. 6 or 12 volts. No parts to wear out, requires no lubrication, no up-keep. Operates magnetically. Good for lights or horn signals.

Write for Folder, Prices and Discounts.

MACCHI & COMPANY

819 Valencia Street, San Francisco 10, Calif.

BLAZE GUARD

IS YOUR GUARD

AGAINST INFLATED FIRE HOSE PRICES!

Remember when almost any serviceable fire hose sold at $2.00 to $3.00 per foot? When the fire hose budget presented a frightening problem, particularly to smaller departments striving desperately to stretch the appropriation over an absolute minimum of footage needed for safety?

AH, BUT THAT WAS B. B. G.
(BEFORE BLAZE GUARD)

During BLAZE GUARD'S amazing leap to leadership, preconceived ideas of distribution were revolutionized, cost of hose to the fire departments dropped as much as forty per cent.
NOW, in better communities from coast to coast, millions of feet of fire-killing BLAZE GUARD fire hose form your bulwark against the return of SKY PRICES.

WE PLEDGE TO YOU: So long as BLAZE GUARD remains a powerful operating factor in the fire hose industry, sane and sensible quotations will prevail.

For FREE booklet entitled: "High Quality and Low Prices Are NOT Enemies," write to:

BLAZE GUARD MFG. CO.
North Bergen, N. J.

Largest Independent Producer of Time Warranted Fire Hose

FIREMEN'S SHIELD-LITE

BUILDERS OF SPECIALIZED
RESCUE AND FIRE APPARATUS

GOLD CREST

SAFETY EQUIPMENT CORP.

HIGHWAY 22 P. O. BOX 155
DUNELLEN, NEW JERSEY

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BADGES

THE MODERN INNOVATION
IN METAL CRAFTSMANSHIP

- Superior Solid Backs
- 10 Year guaranteed Hat and Coat attachments
- STA - BRITE — the exclusive Nielsen-Rionda metal for a life time of golden brilliancy

Write for our new 1960 catalog—free for the asking

Dept. FE 8

NIELSEN-RIONDA, INC.
40 JOHN ST., NEW YORK 38, N. Y.

MANUFACTURERS' NEWS

Continued from page 731

minutes the structure collapsed, completely gutted by the fire.

The straw in the treated building was then ignited. As the heat built up, the paint swelled up in the characteristic intumescent action. The fire was confined to the room of origin and, as the straw was consumed, the fire died out. Inspection of this structure after the demonstration revealed that the F-X paint had swelled to a depth of 4 and 5 inches in places, and that the plywood walls were undamaged. With the blisters scraped off, the walls would be ready for repainting.

As part of the demonstration, a suite of living room furniture was placed on a plywood platform which had been coated with F-X. A fire, which was set under the platform, failed to penetrate it, and the furniture was undamaged.

Underwriters' Laboratories, Inc. has given the new product a flame-spread rating of 10 when applied according to the manufacturer's directions. This listing appeared in the U. L. June bimonthly supplement. The manufacturer's eastern representative is F-X of New York, Inc., 60 Wall Street, New York 5, N. Y.

Mighty Mike Amplifier

A new high-powered voice amplifier, the "Mighty Mike," has been introduced by Hamilton Electronics Corporation of Chicago. Said to be completely self-contained, and lightweight, it operates on eight standard flashlight batteries or from a 12-volt automobile battery and is rated at 30 watts of power. Bell & Gustus, Inc., 4328 North Elston Avenue, Chicago 41, Ill., are distributors.

Kidde Home Fire Alarm

Kidde Ultrasonic & Detection Alarms Inc., Clifton, N. J., has announced a new home and farm fire alarm system which it is claimed can be installed by any handyman. The system comprises six fire detector elements, 200 feet of wire, staples, screws, and installation instruction brochure and a control panel, battery and battery power gauge. Its detector elements are approved by Underwriters' Laboratories and Factory Mutual.

New Aluminized Helmet

Wheeler Protective Apparel, Inc., 224 West Huron Street, Chicago 10, Ill., has anounced a new fire fighting helmet said to feature heat, moisture and impact resistance.

The design incorporates a wide-vision "picture window" eye piece, a fiber glass base and a replaceable cover of aluminized asbestos or rayon. The vision piece is available in a number of materials.

Goodyear Portable Pump

A new portable fire pump, said to weigh 50 pounds and featuring aluminum body construction with synthetic rubber bonded steel parts, is being offered by Goodyear Pumps Inc., 9 Rockefeller Plaza, New York City. The positive displacement pump is said to deliver 50 gpm at 100 psi at a suction lift of 28 feet. It is equipped with a two-cycle gasoline engine mounted on an aluminum skid. A four-cycle engine is optional.

Christopher Moves

The Christopher Company announces the opening of their new office at 1095 Madison Avenue, New York. At this new location, Christopher will have an art gallery of old and contemporary paintings, including a permanent collection of fire paintings.

New Ansul Extinguishers

Ansul Chemical Co., Marinette, Wis., has announced that the introduction of its new Sentry "Emergized" series of 10, 20 and 30-pound dry chemical extinguishers scheduled for September will present several improvements in design. The new unit will differ from conventional extinguishers by containing the pressurizing medium within the dry chemical tank.

New Philadelphia Pumpers

Seven new engines were recently completed for the city of Philadelphia by John Bean Division, Food Machinery and Chemical Corporation, Lansing, Mich.

*See You at Booth #4 at the I.A.F.C. Convention in Grand Rapids

PLECTRON

THE ALL NEW, RADIO ALERTING SYSTEM

The PLECTRON Sentry

Place a tone activated PLECTRON F.M. Radio Receiver in each fireman's home and send emergency voice messages direct from your present 2-way base transmitter into every fireman's home.

Benefit from selective calling, silent alarms, and fast, efficient alerting.

Receivers available for any radio frequency in the 25–54 and 152–174 megacycle bands, and for activation from any tone frequency between 500 and 3000 cps.

CHECK THESE FEATURES:

- Fully transformer powered.
- Crystal frequency control.
- Tone activated.
- Automatic reset to "silent standby."
- Super-hetrodyne receiver circuit.
- Low power consumption—28 W.
- Designed for "Narrow-Band" reception.
- Long-range reception (10 miles) without outdoor antenna.
- Compactly built in ONE case, easily portable—10" x 5" x 6" deep.
- Attractive metal case, choice of colors.

Low cost—$89.50 each.

Distributors and Dealers Throughout the U. S.

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PLECTRON CORPORATION

OVERTON, NEBRASKA

our 56th year

STANLEY H. REESE BADGES 57 WARREN ST. N.Y.

FIRE BADGES

We can supply badges in any quality from nickel plate to solid gold with hundreds of attractive designs to choose from. We will welcome your inquiry.

Over 56 Years of Experience Is Your Guarantee of Satisfaction

CATALOGUE No. 85FE IS OUR CURRENT ISSUE. IF YOU DO NOT HAVE THIS ONE, A COPY WILL BE SENT ON REQUEST.

S. H. REESE

57 WARREN STREET
NEW YORK 7, N. Y.

The combination high-pressure-fog and volume pumpers join 17 others that have been built for Philadelphia by John Bean Division.

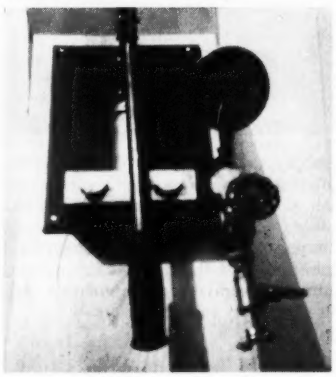
Kar-Pak P. A. System

Midwest Audio Corp., Morton Grove, Ill., has introduced the "Kar-Pak," a 10-watt transistorized portable-mobile sound system. The unit is said to have a range of up to three-quarters of a mile. It operates on both 6 and 12-volt cars from a cigarette lighter connection or by means of a self-contained battery pack.

Waukesha Expands

The Waukesha Motor Company, Waukesha, Wis., has announced plans for three new branches in southern California and the purchase of the entire inventory of engines and parts formerly held by its distributor, Waukesha Southern California. The expansion will give Waukesha three new branch operations in Watts, Bakersfield and Ventura, in addition to the present branch offices and warehouse located at Vernon.

Hydrostatic Test Pump



Charlan Brass Products Co., 67 Valley Road, Lexington, Mass., is marketing a hydrostatic pump designed for testing 2½-gallon soda-acid and foam fire extinguishers, small valves, short lengths of hose and small low-pressure cylinders. Said to weigh 19 pounds, the unit mounts on a board 10 by 24 inches.

Please turn page

Laboratory Tested & Proven PERMA-SIGNS (Do-It-Yourself)

Pure Gold & Standard Colors Maltese Crosses—Artwork City Seals—Emblems & Specialties.

Robert W. Hunt Co. reports 93% ADHESION after 300 Hours in WEATHEROMETER TEST OF GOLD & COLORS TO PRESSURE-Sensitive Backing.

Send for copy of report and SAMPLE PERMA-SIGN.

NOTICE

About September 15 GOLD STRIPING & GOLD or COLOR LETTERS of different styles will be Available.

PERMA-Signs

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511 LINDEN AVE. SIDNEY, OHIO

"RANGER"

FLAME PROOFED

FIRE BROOM

The Finest Most Durable Available

A REAL FIRE FIGHTING TOOL BEST SUITED FOR GRASS AND UNDERBRUSH FIRES BY TEST.

- ★ Flame Proofed Fibres
- ★ Heavy gauge rust-proof metal Head
- ★ Strong Hickory handles
- ★ Overall length 60"
- ★ Meets U. S. Forestry conservation and City Fire Department Specifications
- ★ Guaranteed

NOTE: Now also available with heavy gauge hot dipped galvanized steel handle at no extra cost.

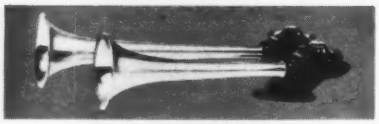
DEALER INQUIRIES INVITED

WRITE: PERFEX

41 Dinsmore Place, Brooklyn 8, N. Y.

Hadley Lifesaver

MODEL NO. 900



LOUD enough

to blast your way through any traffic

- Revolutionary horizontal diaphragms . . . mounted above horn where rain and dust cannot reach them . . . this means dependable sound power!
- IT'S LOUDER! Factory tested 4-1/3 times louder than any comparable air horn.
- Handsome guaranteed chrome plated projectors. Overall lengths 16¾". Bells are 3½" in diameter.

FOR TRUCKS WITH AIR BRAKES

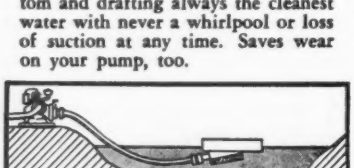
List Price $27.50

Hadley Horn manufacturing Co.

2221 Albion St., Toledo 6, Ohio

ANY WATER SOURCE NOW USEABLE!

The new Float Dock Strainer makes most any stream or pond useable for fighting rural fires or for filling your tanker. Float Dock will draft in deep or shallow water — off the bottom and drafting always the cleanest water with never a whirlpool or loss of suction at any time. Saves wear on your pump, too.



Strainer drafts just below the surface and down to the last few inches.

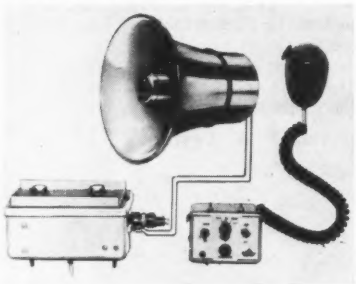
WRITE your distributor or manufacturer for brochure and prices. Specify hose size.

Manufactured Only By

FOL-DA-TANK COMPANY

Box 361, Rock Island, Illinois

New Fyr-Fyter Amplifier



The Fyr-Fyter Co., 221 Crane Street, Dayton 2, Ohio has introduced an improved model of their transistorized "Penetrator" combination electronic siren, public address and radio amplifier system. The successor to their original model is said to feature 50-watt output siren, low battery drain and easy installation and service.

Blue Light Auto Emblems

Koons Foundry and Machine Works, 150 Huber Street, Secaucus, N. J., is producing a cast aluminum auto identifying emblem for use by volunteer firemen. The traditional cross-shaped device carries the identifying letters in high relief against a bright red background and a 21-candlepower bulb illuminates a blue lens mounted in the center. Actual size is 7½ by 7½ inches.

Aluminum Touch-Up Kit

Fyrepel Products Inc., Newark, Ohio, is marketing a pressurized spray can which is said to make surface renewal possible for all aluminized safety clothing and equipment. The company suggested, in addition, that the flame-reflecting aluminum be sprayed on regulation fire boots as a safety measure.

New Bush Hook Construction

Mann Edge Tool Co., Lewistown, Pa., has announced a new production method of forging bush hook heads in a single piece. The new method is said to retain all the advantages of previous design while eliminating any possible weld imperfections, an inherent weakness of the former construction.

FIRE DEPT. VOLUNTEER

IDENTIFICATION SIGNS, PERSONNEL ALL FIRE DEPARTMENTS

Standard styles made in the following names: CHIEF, ASSISTANT CHIEF, CAPTAIN, LIEUTENANT, VOLUNTEER, MEMBER, PRESIDENT, SECRETARY, TREASURER, CHAPLAIN, INSPECTOR, DRIVER, ENGINEER, FIRE DEPARTMENT, POLICE, AUX. MEMBER, FIRE-POLICE and POLICE-DEPARTMENT (in BLUE Finish). Other colors on order.

Priced $1.25 any two names, .65¢ single. Special made with your department name minimum order of 25 plates $1.50 each or 50 plates @ .88¢ each.

New Circular on Request. Sold everywhere, order direct, or see your dealer.

E. B. Lane

32 Greenwood Avenue

Toledo 5, Ohio, U. S. A.

CONTROLATOR

HYDRAULIC BOOSTER — HAND CONTROL BRAKE LOCK — LINE PRESSURE GAUGE

INCREASED BRAKING AND HOLDING • PAYS FOR ITSELF • SAVES MONEY — TIME REPAIRS ACCIDENTS

FINGER FLIP CONTROL • ADDED FLUID AND POWER • GRADUALLY APPLIED OR RELEASED

MUCH MORE THAN JUST A BRAKE LOCK

A Simple Powerful

AUXILIARY HYDRAULIC BRAKE

MOUNTED BETWEEN THE MASTER CYLINDER — OR BOOSTER — AND WHEELS

MASTER OF THE ROAD — AND LOAD

GIVES BRAKES WHETHER OR NOT THE MOTOR IS RUNNING — AND IN MOST CASES IF BOOSTER OR MASTER CYLINDER FAILS. GIVES BETTER CONTROL OF EVERY STOPPING, HOLDING, AND STARTING OPERATION—WHETHER THE TERRAIN IS ROUGH OR HILLY—OR THE LOAD LIGHT OR HEAVY.

DO MORE WORK — IN LESS TIME

YOU CAN GO WHERE YOU WANT TO GO—STOP—HOLD—RELEASE —AND GET OUT—BETTER AND SAFER. OR YOU CAN MOVE A FOOT OR MILE—UPGRADE OR DOWN—WITH NO BACKROLL OR LOSS OF CONTROL.

THOUSANDS PRAISE ITS SAFETY AND DEPENDABILITY

YOU ALWAYS KNOW

THE BRAKE PRESSURE NEEDED OR APPLIED—AND CAN CHECK THE SYSTEM FROM THE CAB — FAST AND ACCURATELY

BRAKES EASILY RELEASED

REGARDLESS OF PRESSURE — WITHOUT HARM TO MASTER CYLINDER RUBBERS

Easily Installed and Serviced

NO INTERFERENCE WITH CONVENTIONAL BRAKES

Offered By MANUFACTURERS — JOBBERS — DEALERS

POWER EQUIPMENT COMPANY

BADGES *of authority*

DESIGNED WITH DISTINCTION
EXECUTED IN METALS OF TIMELESS BEAUTY...WORN WITH HONOR AND RESPECT

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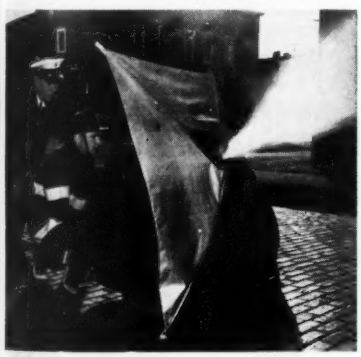
NEW YORK 13, N.Y.



FYRUMBRELLA enables men to stay right up there—no need to be "run out" by roaring heat! No more lurking behind pieces of metal, bed springs, doors, wetted down tarps or blankets.

● Five feet square, when open, the aluminized surface deflects 95% of the radiant heat. The tough **GLASS** cloth construction makes it non-burnable. Three men with 2½" lines and any type nozzles may work through the hose port. Adequate forward vision is provided by eye ports on each side. The **FYRUMBRELLA**, weight only 9½ lbs., folds so compactly that it fits inside a section of 4" suction hose. The **FYRUMBRELLA** combines an aluminized reflective surface on strong, non-burnable glass cloth backed by a coating of neoprene for greater strength. Hardware is of a rugged steel construction to withstand raps and bumps. Write for complete information on Fyrumbrella, other Fyrepel Fire Fighting Equipment and Heat Protective Clothing.

FYREPEL PRODUCTS, INC.
Dept. A Box 503 Newark, Ohio

Appointments and Promotions

C. W. Abele has been appointed export manager of Fire-End Products Company, 656 Gerard Avenue, New York 56, N. Y., it was announced by Anthony J. Sposato, general manager. He had been export manager for the General Fire Extinguisher Company.

Carl T. Vangsness has been promoted to sales supervisor for "Scotch-Shield" brand aluminized fabric, it was announced by Minnesota Mining & Manufacturing Co.'s reflective products division. He will be responsible for the entire range of markets in which heat-protective garments made of 3M's aluminized fabrics are being used.

Theo. H. Jones, has been elected vice president-general sales manager of Mack Trucks, Inc., Plainfield, N. J., it was announced by Elliott G. Ewell, executive

vice president-sales. Jones, a veteran in the automotive field for more than 35 years, has been with the company since May 1930. He has been general manager of the Southern Division since 1950.

King Young, formerly assistant to the vice president, American District Telegraph Company, New York 13, N. Y., has been named vice president of ADT's European operations, with headquarters in London.

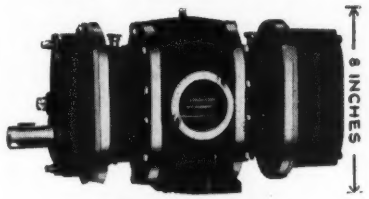
J. O. Maxey, has been appointed manager of the special and government sales division, formerly supervised by Young.

Clyde R. Kager has been named a sales representative of The Cornelius Company, portable air compressor division, Minneapolis, it has been announced by Joseph W. Mahanay, sales manager of the portable air compressor and aviation divisions. He will be concerned with sales in fire, industrial safety and skindiving fields.

John J. Cullen has been promoted to product manager of engineered and molded rubber products by United States Rubber Co., Passaic, N. J.

Harris J. Klein has been elected chairman of the board of Ward La France Truck Corp., Elmira, N. Y. A practicing attorney, Mr. Klein headed the group of investors who purchased the assets and business of Ward La France earlier this year. He is chairman of the executive

WHEN CHIEFS TALK GUTS...
they Specify the

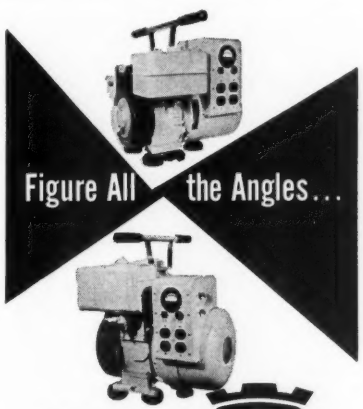


LEONARD *Rotary Gear* **PUMP**

- **for quickest possible attack,**
- **to reduce Department costs,**
- **because the self-priming Leonard Pump can run continuously with NO maintenance!**

ASK the Chief who uses one
ASK ANYBODY who knows
ORDER from your local dealer.

POTTER-HORN INC.
936 Statler Bldg., Boston 16, Mass.



and you'll specify **pm** *Electric Plants*

Exclusive PM features, all standard equipment and engineered specifically for fire department use—save $150 in extra costs!

Standard features include:

- Electric RPM Indicator
- Electric and Manual Start
- Automatic Spark Advance
- Remote Control
- 4 to 6 receptacles of all types
- *One Year Warranty*

Write for free demonstration. There's a PM Field Engineer in your city.

Pacific Mercury
14052 Burbank Blvd.
Van Nuys, Calif.

Manufacturers of the Thomas Electronic Organ

committee, Cooper-Jarrett, Inc.; a director of the American Fidelity Fire Insurance Company; a director and member of the executive committee of Fairbanks Whitney, Inc., and chairman of the Wanamaker Buildings Associates.

Robert Lassell has been appointed sales manager, municipal fire alarm and signal systems, The Gamewell Co., Newton Upper Falls, Mass., it was announced by G. A. Swim, executive vice president.

Formerly manager of the central region, Chicago, Ill., he will direct the sale of the company's municipal fire alarm and police signal systems nationwide, and will headquarter at Newton, Mass.

The Roberts Co., Wayland, Mass., has been appointed distributor of electronic talking Sparky fire dogs by the R. J. Mealey Corporation, San Francisco, Calif., manufacturer of the toys.

Publications Available

Exide Automotive Division, The Electric Storage Battery Co., P. O. Box 6266, Cleveland 1, Ohio, has published a 32-page booklet "Facts about Storage Batteries," which contains useful information for those who work with storage batteries. It is free upon request.

The California Fire Safety Association has available a list of all local fire ordinances in Los Angeles County. Copies may be obtained by writing to Samuel K. Freshman, general counsel, Suite 306, 170 North Robertson Boulevard, Beverly Hills, Calif.

Radio Corporation of America, Communications Products Department, Camden 2, N. J., has issued a broadside describing its "Personalfone" two-way belt radio and some of the fire service uses of this unique unit.

Globe Manufacturing Co., Pittsfield, N. H., has issued a new catalog describing its line of firemen's turn-out clothing. The well-illustrated booklet includes swatches of materials employed in the manufacture of the clothing.

The Manufacturing Chemists Association, Inc., 1825 Connecticut Ave., N. W., Washington 9, D. C., recently issued a chemical safety data sheet which describes safe handling practices for toly-

SAFETY DIRECTORS:
Now you can
***PAINT OUT* FIRE!**

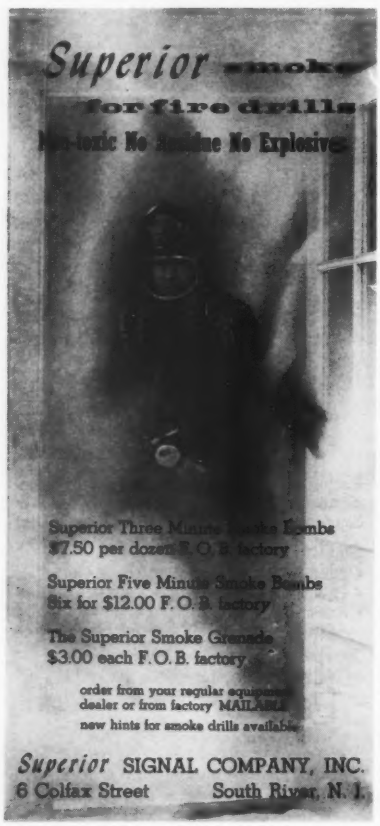
F-X
U. L. Flame Spread Rating: 10

★ Here at long last is the fire retardant paint that you've been looking for! Maximum intumescence is the primary factor behind →
★ That extraordinarily low rating gains that vital extra time for the fire fighters.
★ F-X is effective on wood, plaster board, metal and even combustible plastics. Does not generate smoke or noxious fumes. It is also odorless and inflammable in its liquid state.
★ It comes ready to apply by brush, roller or spray. Can be water thinned and comes in attractive shades or as clear varnish. Price is competitive with ordinary paint.

Manufactured and distributed by
The ST. REGIS Corporation
(Builder's Research and Chemical Co. Division)
4990 East Asbury Denver 22, Colo.
Representatives
F-X OF NEW YORK, INC.
60 Wall Street New York 5, N.Y.
A. H. BENNETT CO.
825 Glenwood Ave. Minneapolis 5, Minn.

FIRE DEPARTMENTS
SAVE MONEY ON AMERICA'S
Finest Selection of
TROPHIES—CUPS
PLAQUES—MEDALS
Write Today For Your Copy of Our FREE 32-PAGE 1959 CATALOG
FREE ENGRAVING
On all trophies purchased from National!

NATIONAL TROPHY SALES, INC.
Dept. FE-89, 75 W. Van Buren St.
Chicago 5, Illinois


Superior smoke
for fire drills
Superior Three Minute Smoke Bombs
$7.50 per dozen F. O. B. factory
Superior Five Minute Smoke Bombs
Six for $12.00 F. O. B. factory
The Superior Smoke Grenade
$3.00 each F. O. B. factory
order from your regular equipment dealer or from factory MAILABLE
new hints for smoke drills available
Superior SIGNAL COMPANY, INC.
6 Colfax Street South River, N. J.

END TANK RUST, STICKY VALVES

Dakota TANK SAVER
SOLVES YOUR FIRE TRUCK MAINTENANCE PROBLEMS
Positively prevents rust in booster tank, fire pump and water system. Lubricates valves and gates to prevent sticking, dissolves lime and corrosion deposits on gate and line valves. Deposits a fine film of rust-preventive oil on all metallic surfaces. Give it a try — we know you'll reorder!

Tested and used regularly by hundreds of fire depts.
Available in 4-Gallon Cases 5-Gallon Cans
Order direct or from your fire equipment dealer.
Fire Equip. Dealers—territories open for distribution
DAKOTA CHEMICAL COMPANY
West 12th St. Dept. E, Sioux Falls, S. D.

Bell Top or 8 Point—
Nothing beats a
"Head-Master"® Cap
by WENTWORTH

BELL TOP STYLE 149

8 POINT STYLE 441

For Top Quality Always
SPECIFY
"Head-Master"®
FIREMAN CAPS

UNCONDITIONALLY GUARANTEED
ORDER DIRECT OR FROM YOUR DEALER
Wentworth-Forman Co., Inc.
116 Bedford St., Dept. F, Boston, Mass.
Send for complete catalog

The Fireman's Choice
Powerful Light
When he needs it—where he needs it
Big Beam
PORTABLE ELECTRIC HAND LAMPS

Model 700-A
2000-foot
beam

Most powerful, heavy-duty hand lamp of its size. Adjustable 6-inch head. Operates on four standard No. 6 dry cells.

Model 211
1500-foot
beam

Popular price, light weight, easy to carry. Adjustable 5-inch head. Holds two standard 6-volt lantern batteries. Operates on one; other is a spare.

Write for folder on complete information on these and other Big Beam dry-cell and storage-battery models.
U-C LITE MANUFACTURING CO.
1041 West Hubbard St., Chicago 22, Illinois
In Canada: Bernard Marks & Co., Ltd.,
70 Claremont St., Toronto 3, Ontario

lene diisocyanate used commercially in the preparation of foamed and molded plastics, coating compositions and resins. It contains a brief section on fire fighting. Copies of the bulletin, SD-73, Tolylene Diisocyanate, are available at 30 cents each from the Association.

Russell Fire Equipment, division of Russell Uniform Co., 197 Lexington Ave., New York 16, N. Y. has issued Catalog No. 83 describing its line of general fire equipment. The 74 page, well illustrated book in three colors is available for the asking to the trade.

Eastman Kodak Co., Rochester 4, N. Y., has published a new hand book "Photography in Law Enforcement," which contains a chapter on arson. Well illustrated, the 82-page book is available from Kodak dealers for $1.25.

Ansul Chemical Company, Marinette, Wis., has issued a new six-page folder "A Guide to Fire Extinguishers," which compares characteristics and effectiveness of extinguishers according to Underwriters' Laboratories ratings. Cut-away drawings of a dry chemical extinguisher and a stored pressure water extinguisher are included.

Monitoradio Division, I.D.E.A., Inc., 7900 Pendleton Pike, Indianapolis 26, Ind., has issued a new catalog which illustrates and gives complete technical data on Models PR-35 and PR-155 tunable FM receivers for 30-50-mc or 152-174-mc bands.

Mount Vernon Mills, Inc., has issued a technical fact sheet on its new FFB Gabardine Fabric for uniforms. The cloth is a blend of four fibers and is claimed to be ideal for fire service uniforms. A copy may be obtained from the company's selling agent, Turner Halsey Co., 40 Worth Street, New York, N. Y.

Pitman Manufacturing Co., Grandview, Mo., has published a well illustrated broadside describing in detail the operations of its "Snorkel" aerial platform.

Bar-Way Mfg. Co., 2770 Summer Street, Stamford, Conn., has published a well-illustrated eight-page catalog, No. 59, describing its line of high-pressure hose couplings and accessories. It gives full details and specifications.

Walter Kidde & Co., Inc., Main St., Belleville 9, N. J., has published a 16-page brochure P-49, which describes and illustrates all types of portable and wheeled fire extinguishers, built-in carbon dioxide extinguishing systems, and several types of fire detection devices. Also contained is a chart showing which extinguishers are approved for use on each class of fire.

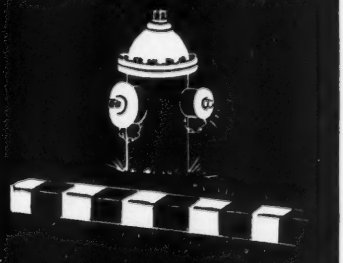
Industrial Electrical Works, 1509 Chicago Street, Omaha, Neb., announces an illustrated catalog of its new line of spring-operated hose reels designed for industrial use including tank trucks and fire apparatus.

Now! Every Firefighter Can Afford This Valuable ADVANCED PROFESSIONAL TRAINING

"The Science and Technique of
FIRE
PREVENTION, PROTECTION and EXTINGUISHMENT"

"PAY-by-the-LESSON" PLAN!
NO BURDENSOME TIME PAYMENTS
Set your own study pace. Take up to 3 years for completion of the course.
APPROVED for KOREAN VETS!
VA Pays Entire Cost of Training
A comprehensive correspondence course for Firefighters who wish to increase their technical knowledge and improve their practical efficiency. While invaluable for promotional purposes, it is also of tremendous advantage in the daily work and responsibility of Firefighters everywhere.
37 INTERESTING LESSONS
Test questions with each lesson rated and returned with model answers.
5 WRITTEN TRIAL EXAMS
Rated and returned with individual comments and constructive criticism by examiners of long professional experience.
Ask Your Own Superior Officers!
Send for Full Information and Detailed Outline of Course ● Ask for Booklet F-20
DELEHANTY
CORRESPONDENCE SCHOOL
Licensed by New York State
113 E. 15th St., New York 3, N. Y.
OVER 80% of N. Y. City's Firemen are Delehanty-Trained

Locate
FIRE HYDRANTS
Fast with . . .
FLEX-O-LITE
Type H Safety Spheres



Now you can reflectorize your fire hydrants and curb areas for positive location at night . . . make each hydrant a gleaming beacon for greater safety. Type H Safety Spheres are easy to apply with ordinary traffic paint at just pennies per square foot. Write for details.
FLEX-O-LITE MFG. CORP.
8101 Flex-O-Lite Drive
P. O. Box 1066 (Affton Br.) St. Louis 23, Mo.

CLASSIFIED ADVERTISEMENTS

Rate $15 per column inch, less 10% for three or more consecutive insertions. Closing date for copy, 25th of month preceding date of issue.
Address FIRE ENGINEERING, 305 East 45th Street, New York 17, N. Y.

FOR SALE

2—1930 American LaFrance 6 cylinder 140 horse power 1000 G.P.M. rotary gear pumpers; 80 gal. capacity booster tank; booster hose capacity 300 ft; hose bed capacity 1200 ft. of 2½" hose. Good tires; mechanically operative. 1—1930 American LaFrance 6 cyl. 140 H.P. 85 ft. 2 section wooden aerial tractor trailer type with trailer driven by tellerman. Ground ladders not included. All tires in good shape. Hook and ladder operative.

Submit bid on or about August 17, 1959 to Ivan L. Swanson, Purchasing Agent, 307 City Hall, Omaha 2, Nebraska.

FOR SALE

1949 American LaFrance, 750 GPM Pumper, Invader Model, V-12 Engine, excellent condition, low mileage, 150 gal. booster tank, Hose Bed will hold 1500 ft. of 2½" hose. $7,500.00. Contact Chief H. J. Leary, McKinley Fire Co. #1, McKinley, Phila. 17, Pa.

NEW

LARGE QUANTITY CO2, 11 LB. CAPACITY CYLINDERS. CAN BE USED FOR OXYGEN OR SKIN DIVING AIR SUPPLY. LATEST FLAT BOTTOM LIGHT WEIGHT TYPE. SIZE 5¼" DIA. X 25" TALL WITH ½" N.P.T.

THE PRICE IS RIGHT
ALEXANDER BOX 105 DUMONT, N. J.

WANTED

Carbon Dioxide Recharge Pump—2½ Gallon Extinguisher or Fire Hose Test Pump—Hose Expander. Post Office Box 243, Kenilworth, N. J.

ABSOLUTELY FREE

Yours for the asking. Send post card today requesting Folder F showing complete line of belt buckles with your name, initials, latest Fire Engines, Pumpers, Hook and Ladder, Rescue Wagons, Salvage Trucks and other Firemen enameled emblems which are also available on Tie clasps, Lapels, Money clips, Cuff Links, and Key Chains. Write:

HOOK-FAST SPECIALTIES
Box 1425 Providence, R. I.

PART TIME SALESMEN

We need whole or part time representation. No experience necessary. We build quality fire trucks, and are distributors for fire hose and all allied products. We especially invite Firemen and Extinguisher men to answer. Territory in your immediate vicinity may be open. We furnish personal help.

CENTRAL FIRE TRUCK CORP.
BOX 158 MANCHESTER, MO.

SAVE LIVES . . . LOCATE & RESCUE THE HANDICAPPED DURING FIRES

Identify their homes with F D RESCUE MARKERS . . . approved and being used by FIRE DEPTS. throughout the U. S. & Canada. Makes a grand Public Relations Project.
FREE SAMPLE KIT ON REQUEST.

F D PRODUCTS
514 W. Englewood Ave.
Teaneck, N. J. Dept. FE-10

FIRE TRUCK BARGAINS

1959 Ford, Chevrolet, or International Class A Pumper with 500 GPM Pump and 500 gallon Tank built to Underwriters Class A Requirements, for only $6,500.00.

NEED a siren or Red Light? Consult my low prices on TOP QUALITY USED SIRENS AND BEACON RAY LIGHTS, Trade-ins accepted.

Terms arranged if desired.

EDWIN R. JENNY
2024 Heitman Street
Fort Myers, Fla.

FOR SALE

One Hahn 1941 Fire Apparatus with 125 H.P. Waukesha motor, 350 GPM Northern pump, 150 gallon tank in excellent condition.

Gold Crest Safety Equipment Corp.
U. S. Highway 22, P. O. Box 155
Dunellen, New Jersey

"BRAVE MEN AND BRIGHT MACHINES"

The colorful saga of the first 100 years of the MIDDLETOWN, N. Y. FIRE DEPT.
Over 200 Illustrations—Hard Covers—Size 11" x 8". Photos of every apparatus used by Middletown's SEVEN Fire Companies from 1859 to date.

Price postpaid $3.25
MIDDLETOWN FIRE DEPARTMENT
MIDDLETOWN, N. Y.

OPPORTUNITY FOR SALESMEN

We have an exceptional opportunity available for men now selling fire equipment, to add the Lum Unique Fog Nozzle to their present line. Generous commission. For particulars write:

B. E. Nichols Manufacturing Co.
22201 Edison Ave. Dearborn 8, Michigan

FIRE DEPARTMENT CHRISTMAS CARDS PARTY SUPPLIES

SEND FOR OUR NEW FREE BROCHURE FEATURING FIVE NEW XMAS CARDS FOR 1959

Fire Prevention, Antique and Modern Rigs, All Purpose and Comic Cards. All in Actual Size and Color.

COASTERS 4 Diff. Rigs 12 Doz. $4.00 Ppd. Imprinting your name. $1.25 per Gross
MATCHING COCKTAIL NAPKINS. Box of 100 $2.25. Imprinting 75¢ per box
PLACE CARDS 3 Doz. $1.00. $2.25 per 100
LARGE 4 RIG PLACE MATS. 50 $1.50 $2.75 per 100. Imprinting $1.00 Per 100 extra

HOBBY MATS
Box 145 Dept. F BALSAM LAKE, WISC.

ADVERTISING
on this page
BRINGS RESULTS

1940 — CITY SERVICE LADDER TRUCK FOR SALE

1940 Mack City Service Truck complete with ladders to be sold on "as is" basis. Sealed bids will be received until 8:00 P.M. August 24, 1959, at Town Manager's Office, 36 Trinity St., Newton, N. J. Town reserves the right to reject any and all bids. Truck may be seen, by appointment, by calling Newton 560 or 196.

PART TIME SALESMAN WANTED

Sell the finest fire alarm systems for homes or commercial places in your spare time. The demand for alarm systems is tremendous today. For free profit facts and product information write today.

FIRE-LITE ALARMS, INC.
192-Z Fulton Terrace
New Haven 2, Conn.

Ideal Fire Prevention Week Prize and Christmas Gift

SPARKY FIRE DOG PLUSH DOLL

$5.95 add 60¢ shipping
(double shipping charge for Canada)

Rugged, lovable, colorful, highest quality SPARKY stuffed doll wears a removable red fire hat, blue denims, white shirt, tie and boots. Youngsters love him and you will too—"makes fire safety understandable." Order today from

ROBERTS CO.
BOX 86E WAYLAND, MASS.

Write for New free catalog of other SPARKY gifts and fire safety prizes.

NEW AUTO EMBLEMS FOR ALL FIREMEN

IDENTIFY YOURSELF to others with this attractive emblem. Will stick to any part of your car. Just press it on by hand—it stays on. Size —4½" diameter. Color—fluorescent red, black and white.

3 EMBLEMS for $1.00
Send today for yours.
F D PRODUCTS Dept. C-1
514 W. Englewood Ave., Teaneck, N. J.

Exclusive Offer to Firemen and Retired Firemen ONLY:

ADD MATERIALLY TO YOUR INCOME

To turn your "off hours" into "income hours," America's original designer and pioneer manufacturer of revolutionary automotive spray-wash system now offers this factory-directed, SPARE-TIME sales opportunity. No sales experience necessary—simple demonstration can sell this equipment:

Your very first sale offers a high profit on this "must" item for service stations, garages, motor-truck fleets, car dealers, etc. Sales leads furnished from national publicity and advertising campaign. Protected local territories now open exclusively to firemen and retired firemen, but you must act NOW! All inquiries confidential.

Write immediately for full details to:

Robert Messler, Vice-President
Sprayaway Corporation of America
P. O. Box 1102
Tulsa, Oklahoma

NEW!
Hydrant RATCHET WRENCH

4" SWING
OPENS ANY HYDRANT EASIER-FASTER

FIRE CHIEFS SAY:
"It's the fastest, most convenient Wrench ever devised." "the short 4" swing is wonderful to get into hard-to-reach places." "Your new Ratchet Wrench has been a life saver on many occasions."

SIZES — 1½" — 1¾" — 2"
Each size adjustable down to 1" to fit all pentagons. Made in 16" and 20" handles. Also available in non-adjustable square and hexagon heads, please give exact size required

16" and 20" Handles

ORDER TODAY
MONEY BACK GUARANTEE

THE S-T HYDRANT WRENCH CO.
P. O. BOX 921-E HOLYOKE, MASS.

BOOKS

For the Modern Fire Fighter . . .

Recognized by the Fire Service as Standard

Promotional Study Course for Firemen—$3.00

Fire Service Hydraulics—$3.00

(The Above Prices Are All Postpaid)

Remittance Must Accompany All Orders

Book Department
FIRE ENGINEERING
305 East 45th Street
New York 17, N. Y.

Annual Reports

Charlotte, N. C. — Chief Donald S. Charles recommends the erection of four new fire stations to protect areas to be annexed to the city January 1, 1960, and the enlargement of Fire Station No. 4. Fire alarm facilities will also have to be extended to the 32 square miles of territory to be annexed.

Everett, Wash.—Chief Earl Brower reports the purchase of a 100-foot metal aerial ladder truck and other equipment. He recommends, as a major need, a drill area including tower, drafting pit, hydrants and oil burning facilities, in connection with the waterfront station.

Milwaukee, Wis. — Chief Edward E. Wischer reports a new fire station completed and occupied and another scheduled for completion and occupancy early this year. A 100-foot aerial ladder truck was put in service as Ladder 18, and a panel truck was outfitted by the department shop and placed in service as Life-saving Squad 1.

Waterloo, Iowa—Chief Ray Tiller recommends the adoption of a modern fire prevention code and the organization of a fire prevention bureau directly under the chief of the fire department.

Knoxville, Tenn. — Chief Ray Conner reports total fire losses of $143,815, a per capita loss of $1.09, the lowest in about 20 years, while the department answered a total of 2,201 alarms, the most in several years.

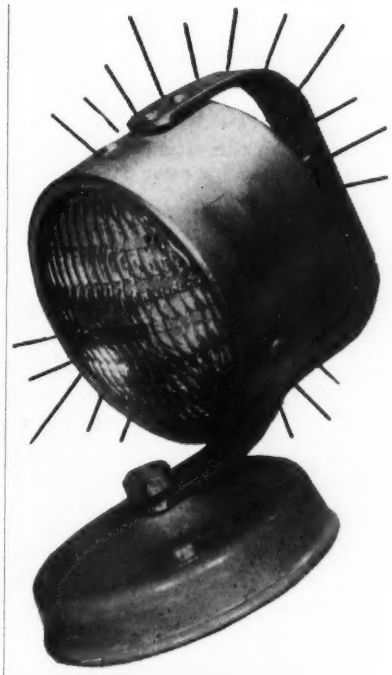
Hampton, Va. — Fire Marshal F. F. Hopkins reports the adoption of a set of rules and regulations for the government and operation of the department; the inauguration of a training program for off-duty paid personnel, and the completion of the most successful fire prevention program in the city, conducted by a citizen and fire department committee.

West Milwaukee, Wis. — Chief John Pavlik reports a total fire loss of $35,-781.24, an increase of $33,588.15 over 1957 losses.

Salt Lake City, Utah — Chief J. K. Piercey recommends that the department's manpower be increased by 46 more men; the addition of a crash fire fighting truck at the airport, and construction of a new drill tower.

Wichita, Kans.—Chief F. E. Wood reports that while the department answered 3,193 alarms, an increase of 343 over 1957, fire losses amounted to $520,-546, a decrease of $146,163. The per capita loss was reduced from $2.66 to $2.00

Baltimore County, Md.—Chief A. P. Orban reports a total fire loss, including volunteer fire companies, of $856,765, a decrease of $499,340 from 1957.



VOLUNTEERS

Get your flashing warning light over the top of traffic with the McD Model SMP-12 Electro-Magnetic vehicle warning light.

Push the button it clings to your car roof or dash-cowl. Push again it releases. Sealed beam with acrylic lens gives terrific intensity. Plugs into cigarette lighter.

Can also be used as a hand light to control traffic or to mark disabled cars.

Not a toy—Rugged—Serviceable.

If an all around naval lens is desired, Specify Model SMF-12.

LIST PRICE **$19.80**

If rubber suction cup unit instead of electro-magnetic base is desired Specify Model SRP (Single Direction), Specify Model SRF (All Around lens)

LIST PRICE **$9.98**
SPECIFY LENS COLOR AND CAR VOLTAGE

WRITE US FOR DETAILS ON the most complete line of flashers, vehicle warning lights and portable lights.

If your distributor does not have these units, write Dep't. F

JULIAN A. McDERMOTT CORP.
1639 Stephen Street, Ridgewood 27, L. I., N. Y.
"Lights To Save Lives"

WATER

where and when you want it

PACIFIC PUMPERS

have been the standard in fire suppression for over 30 years

The Pacific line has been developed through 30 years of cooperative work with the experienced, thoughtful leaders of the Forest Service and Pacific's design engineers.

Illustrated is the WX-10 Pumper showing the two extremes of straight stream and effective fog spray performance.

The WX-10 weighs 150 pounds.

Pressure	50	100	150	200	225	250
Gals. per min.	40	38	37	36	35	32

Write for free catalog describing full line of Pacific Pumpers.

PACIFIC *Marine Supply Co.*

FIRE EQUIPMENT DIVISION

SEATTLE 1, WASHINGTON

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BODY GUARD MFG. CO. 795
BOSTON WOVEN HOSE & RUBBER CO. 763
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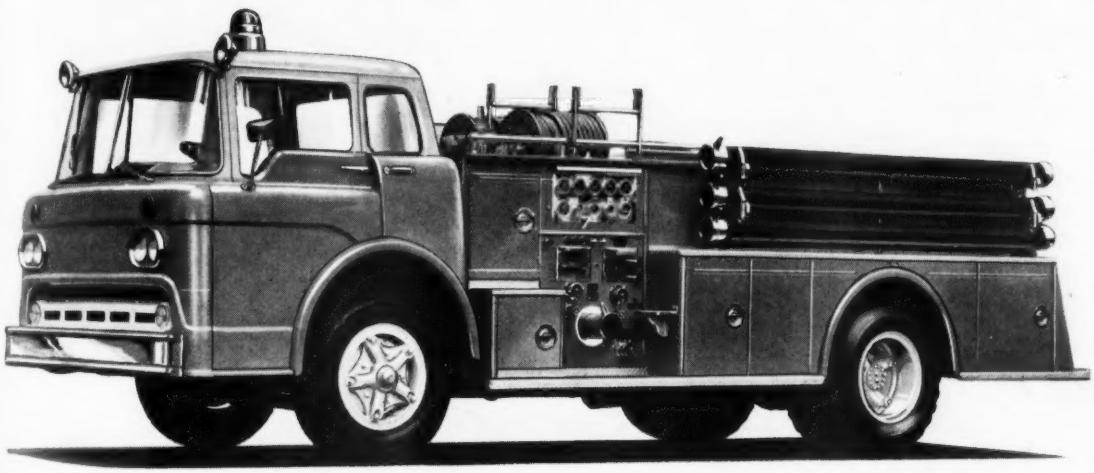

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